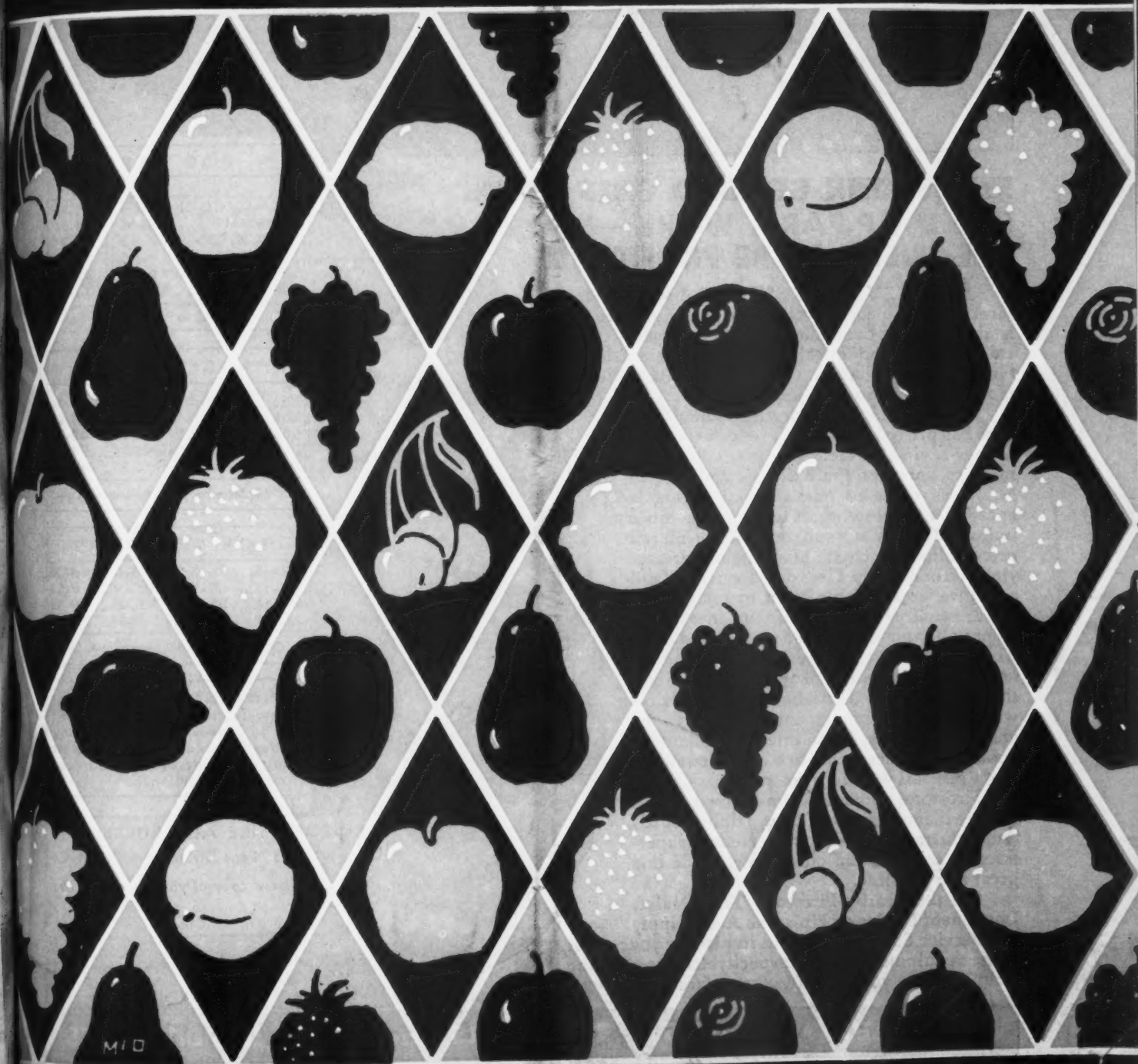


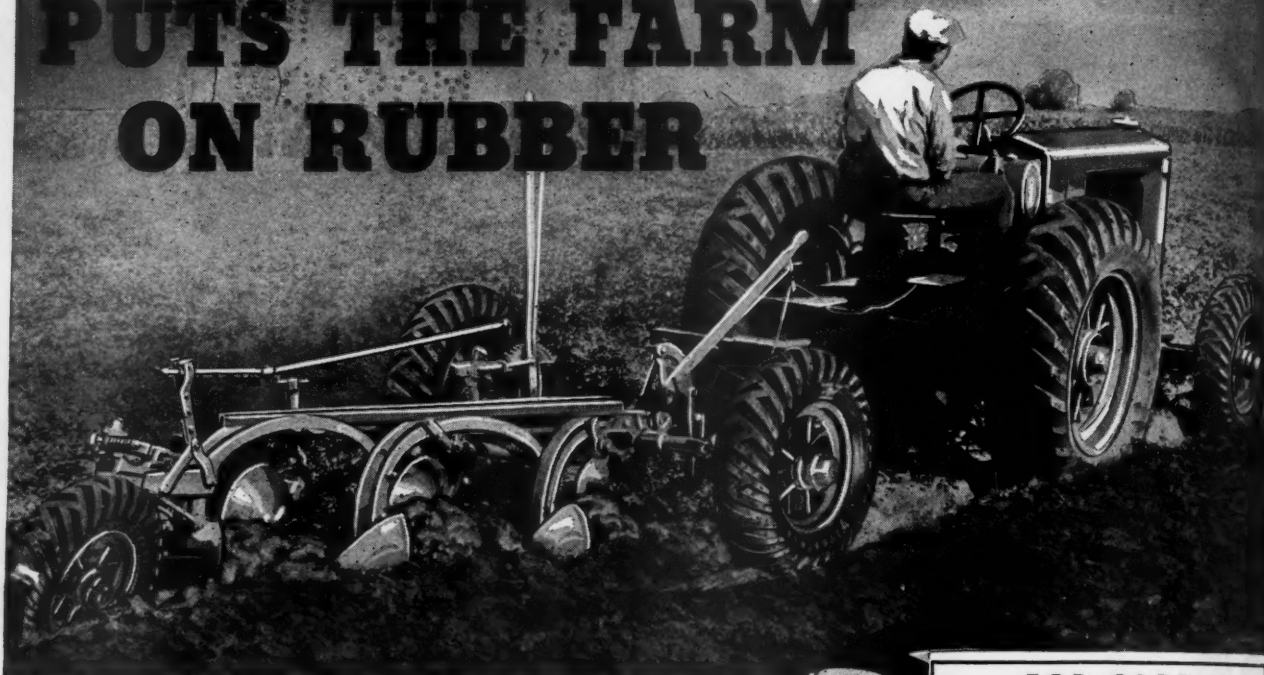


AMERICAN FRUIT GROWER



Firestone

PUTS THE FARM ON RUBBER



FIRESTONE GROUND GRIP TIRES SPEED UP FARM WORK—MAKE IT EASIER—MORE PROFITABLE

HARVEY S. FIRESTONE pioneered and Firestone engineers developed a pneumatic tire which is the greatest contribution in recent years to more efficient and economical farming. Farmers using Ground Grip Tires on their tractors are saving more than 25% in time and fuel.

On all farm implements the Ground Grip Tire has proved of practical time-saving and money-saving value. Wagons, combines, mowers, sprayers, grain drills require up to 50% less draft to pull them. Hauling is speeded up. Plowing is done with more uniform depth. Vines and roots are not injured or cut, allowing closer planting and greater yield. Ground Grip Tires do not pack the soil and give greater protection to equipment.

It requires only a minimum investment to put all your equipment on Ground Grip Tires. With Firestone's new demountable rim and cut-down method of applying the rim to the original implement wheels, one set of tires will fit several implements. Tires can be changed quickly from one implement to another—you need only two or three sets for practically all your implements.

Firestone patented Gum-Dipped cords, with two extra layers of Gum-Dipped cords under the tread, holding the patented super-traction tread to the cord body, made this great tire possible.

See the nearby Firestone Tire Dealer, Implement Dealer or Firestone Auto Supply and Service Store today—and in placing your order for new equipment, be sure to specify Firestone Ground Grip Tires on your new tractor or farm implement.



FOR CARS

		Heavy Duty
4.40/4.50/4.75-21	\$7.85	\$9.80
4.75/5.00-19	8.50	10.60
4.50/4.75/5.00-20	8.35	10.35
5.25/5.50-17	10.55	12.50
5.25/5.50-18	10.65	12.75
6.00-16	11.95	14.15

Other Sizes Priced Proportionately Low

FOR TRUCKS

32x6 Truck Type	\$27.65	7.50-20	\$35.20
32x6 H.D.	36.25	7.50-24	39.00
6.00-20	16.95	8.25-20	49.30
6.50-20	21.95	8.25-24	54.75
7.00-20	29.10	9.00-20	60.75

Other Sizes Priced Proportionately Low

FOR TRACTORS

5.00-15	\$9.35	8.25-40	\$68.40
5.50-16	9.95	9.00-36	66.55
6.00-16	11.15	11.25-24	59.95
7.00-18	15.70	12.75-28	86.85

Other Sizes Priced Proportionately Low

Guarantee — This heavy, Super-Traction tread is guaranteed not to loosen from the tire body under any conditions, and all other parts of the tire are fully guaranteed to give satisfaction.

FIRESTONE TIRE AND RUBBER CO.
Dept. AFG-3 Farm Division—AKRON, O.

Please send me a copy of your new Farm Tire Catalog.

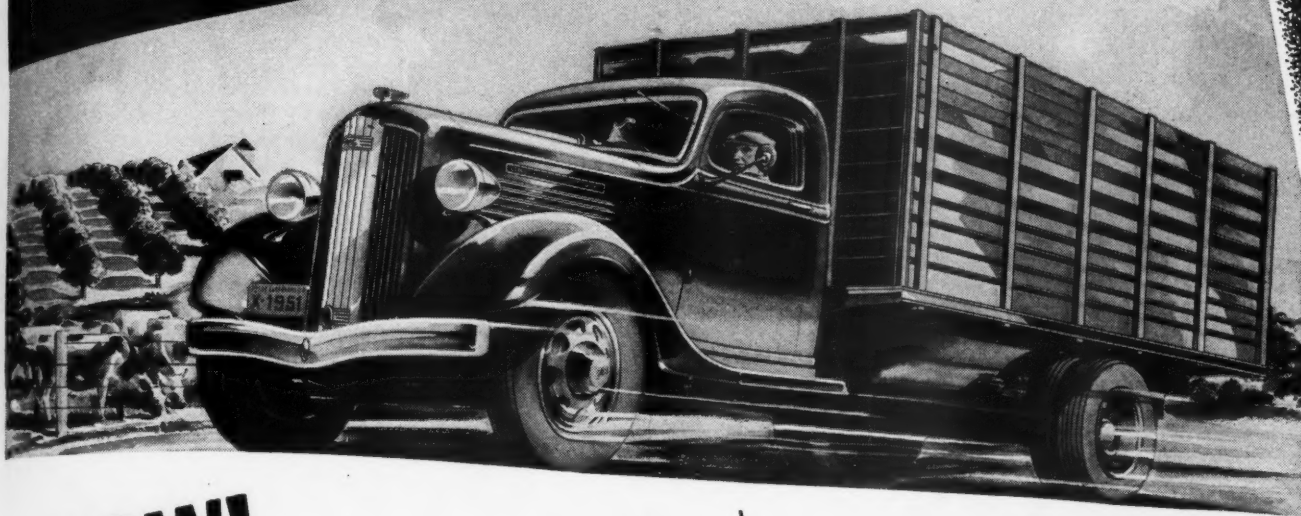
NAME _____

I farm _____ Acres, I own a _____ Tractor

TOWN _____ R. F. D. _____ STATE _____

FOR CARS • TRUCKS • TRACTORS and FARM IMPLEMENTS

QUALITY GENERAL MOTORS TRUCKS *now* CHALLENGE THE FIELD OF LOWEST PRICE



NOW!

A 1½ TO 2 TON GMC
PRICED WITH THE LOWEST

\$525

CHASSIS F. O. B. PONTIAC

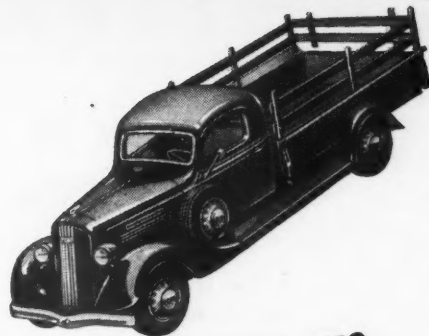
Truck buyers with 1½-2 ton loads to haul are urged—in the interest of their greater profits—to see, compare and weigh the downright value of this many-feature quality GMC. There is new streamlined appearance and there are refinements throughout that assure greater economy, improved performance and longer life.

TRUCKS OF VALUE

Throughout the whole wide range of GMC trucks and trucks with GMC trailers, buyers will find values that challenge the field. Each vehicle, within its capacity range, is correctly powered, balanced, styled and engineered to fit exactly.

SENSATIONAL DUAL PERFORMANCE

GMC Dual Performance Axles, now available in the 1½ to 6 ton ranges, save as much as 28% on gas, reduce upkeep costs, save oil, save time and lessen wear. Ask for the facts.



NOW! A NEW GMC ½ TON DELIVERY TRUCK

A truck big enough and sturdy enough to accommodate a body 7 feet 5 inches in length. A truck purposely engineered for greater economy, improved performance and longer life. And priced extremely low.

\$425

CHASSIS F. O. B. PONTIAC

Time Payments available through
our own Y. M. A. C. 6% plan

General Motors Trucks and Trailers

GENERAL MOTORS TRUCK COMPANY, PONTIAC, MICHIGAN ½ TO 15 TONS



TRY NuREXFORM

It Stays in Suspension . . . No Settlings . . . ALL Trees Sprayed with a Uniform Mixture

Grower preference and demand for NuREXFORM is steadily increasing. A few of the reasons for this growing popularity of NuREXFORM are—

Mixes readily with Lime Sulphur—Not the least important advantage of NuREXFORM is the ideal way it mixes with Lime Sulphur in spraying dilutions. It does not break down, coagulate or impair the effectiveness of either the NuREXFORM or Lime Sulphur. As Arsenate of Lead is extensively used in combination with Lime Sulphur, every grower will immediately recognize the distinct advantage of using NuREXFORM as compared with other Lead Arsenates in such combination spray applications.



FREE A valuable spraying and dusting schedule sent to you upon request.

It remains in suspension—This assures *all* of the Arsenate of Lead getting onto the foliage and fruit, with uniform coverage.

No settlings—Because of the perfect suspension, none of the material settles to the bottom of the tank, to be scraped out as waste sediment.

Does not clog screens and nozzles—The perfect suspension quality and the fineness of the particles eliminates clogging of screens and nozzles. Think of the annoyance, time and trouble that this saves.

For effective control of codling moth and many other chewing insects, ask your dealer for NuREXFORM.

THE GRASSELLI CHEMICAL CO., INC.
Founded 1839
CLEVELAND, OHIO



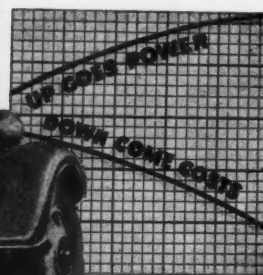
NuREXFORM

The Improved Arsenate of Lead

Remarkable coast-to-coast trip with 10,110-pound payload establishes economy leadership of

Entire cost
of trip only
\$58.26
FOR GAS AND OIL

CHEVROLET TRUCKS



A GENERAL MOTORS VALUE

Truck Users on the FARMS OF AMERICA

Look at this
UNMATCHED RECORD
then let
CHEVROLET TRUCKS
reduce your haulage costs

Location of Test.....	Los Angeles to New York
Distance Traveled.....	3511.5 miles
Running Time.....	129 hours, 24 minutes
Average Speed.....	27.14 miles per hour
Gasoline Used.....	308.6 gallons
Gasoline, miles per gallon.....	11.378
Oil Consumption.....	2 quarts
Cost of Fuel.....	\$57.59
Cost of Oil.....	\$.67
Fuel and Oil (cost per mile).....	\$.016
Average cost per ton mile.....	\$.00328
Water Consumption.....	1 gallon
No mechanical failures	

Entire test conducted under supervision of
A.A.A. Contest Board—Sanction No. 3300.



NEW PERFECTED HYDRAULIC BRAKES
always equalized for quick, unswerving, "straight line" stops.

NEW HIGH-COMPRESSION VALVE-IN-HEAD ENGINE with increased power, increased torque, greater economy in gas and oil.

FULL-FLOATING REAR AXLE
with barrel type wheel bearings on 1½-ton models.



The accompanying picture and record of this remarkable test of a Chevrolet truck give convincing proof of every claim ever made for the power and economy of Chevrolet trucks.

Consider this outstanding demonstration of pulling power and dollar-saving economy in terms of your own needs. Perhaps Chevrolet's tremendous pulling power, the greatest of any truck in its price range, and Chevrolet valve-in-head economy and dependability are the answer to your haulage requirements.

Get the facts with trial loads—your kind of loads—under conditions that will leave no doubt about the superiority of Chevrolet trucks for your haulage needs. Your Chevrolet dealer will be glad to have you make that test—at your convenience.

CHEVROLET MOTOR COMPANY, DETROIT, MICHIGAN

6% NEW MONEY-SAVING G. M. A. C. TIME PAYMENT PLAN
Compare Chevrolet's low delivered prices and low monthly payments.

AMERICAN FRUIT GROWER

PAGE 5



MORE OF EVERYTHING

The former Goodyear farm implement tire was an exceptionally fine tire—successful on thousands of farms. This new tire excels it in every way.

50% MORE TRACTION—Broader, flatter, thicker diamond blocks—deeper shoulder notches—tread 15% wider—longer lug-bars for more ground contact—diamond buttons deeper cut—better for field or highway.

30% MORE DRAW-BAR PULL—Because of increased non-skid depth, greater ground contact, faster, better cleaning. Actual readings on an indicator prove this drawbar pull has been stepped up, on the average, 30%—more in many operations.

100% MORE SHOULDER TREAD—Twice as many lug-bars around the shoulders—higher tread shape—deeper notches—thicker side bars—better on side hills—prevents slip.

48% MORE RUBBER—More rubber in tread and body—greater strength, longer life, more freedom from punctures.

30% BETTER CLEANING—Greater space between diamonds—wider channels force out mud—does not throw dust.

COSTS NO MORE

New All-Traction Tire Wins Farmers' O.K.

FARMERS are enthusiastic about the new Goodyear Tractor Type Tire.

Announced only last month, it is already making staunch friends wherever it is shown.

Farmers like the deep lug bars down the sides. They appreciate the diamonds that grip like spade lugs. They can fairly see the dirt slipping and dropping out of the deep, self-cleaning grooves.

Farmers are quick to recognize that this new Goodyear is an All-Traction tire designed

for sure traction forward, backwards, sideways.

See it yourself. Any Goodyear dealer or farm implement dealer can show it to you.

It is an astonishing time, labor and fuel saver. You pay no premium for it. You can buy it on most liberal terms.

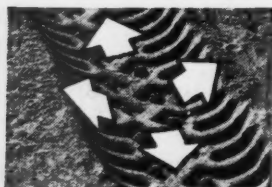
LET US PROVE IT

Goodyear has put this new tire to every test. But we're glad to demonstrate it on your own farm without obligation. Just PRINT your name and address in the margin below, tear it off and mail it to The Goodyear Tire & Rubber Company, Inc., Akron, Ohio.

FOR CAR OR TRUCK IN MUD OR SNOW

GOODYEAR STUDDED TIRES

will pull your car or light truck through the toughest going without chains. Gripping studs are 22 percent higher than ordinary non-skid designs. They taper outward from the base. Self cleaning.



TRACTION ALL WAYS

Here's sure traction—forward, backward or on hillsides. In mud. In sand. On highway.

GOOD YEAR
All-Traction
TRACTOR TYPE TIRE

AMERICAN FRUIT GROWER

TITLE REGISTERED IN

U.S. PATENT OFFICE

MARCH

1936

VOL. 56

THE NATIONAL FRUIT MAGAZINE

NO. 3

NEW TREES FOR OLD

THE American fruit industry is still comparatively young and is in constant need of readjustment and adaptation to new conditions. When an industry, a business, or an individual ceases to change, it ceases to grow. If change means the rectifying of past mistakes—fine! Nothing is gained by shedding tears over the fact that we were wrong in the past; it is better to rejoice that we know more than we did before. From time to time *American Fruit Grower* suggests changes which seem desirable or necessary in order to build a sounder industry.

At this time the question of overproduction is in the air and various suggestions for relief are being offered. Technically we have overproduction when more of a commodity is being produced than can be sold at a profit. With this definition, there are years when there is an overproduction of most fruits, at least locally. What can be done about it?

The fruit industry itself would not favor an adjustment program whereby outside authorities would stipulate a percentage reduction for each orchardist. This is neither a practicable nor a desirable solution. At least that should be the last, not the first resort. The good orchards should remain and possibly be expanded, while those which are unfavorably located as to market or production conditions will eventually fall of their own weight. There is plenty of evidence already that acreage reduction is in progress in sections where there is perennial overproduction. It is being carried out by the owners themselves.

But the first step in setting our house in order is to get rid of poor quality and unproductive varieties. Sentiment should play no part except in the family orchard. Every experienced grower knows that some vari-

eties are more profitable than others and some are notoriously worthless. Why destroy a potential market by furnishing it with low quality varieties? It is unnecessary to attempt to name the offenders here. The big shift—New England from the Baldwin to the McIntosh, in Ontario and elsewhere from the Elberta peach and Concord grape to the superior new varieties, the replacement of strawberry varieties in the southland and pears in other quarters—all represents the march of progress.

The second important move would be the elimination of unprofitable orchards or parts of orchards entirely. In many sections there are acreages that can never be

profitable to the individual owner and yet in the aggregate they succeed in glutting the market and lowering the price of all fruit. A frost pocket, nearness to a piece of woods or a windbreak with its unfavorable consequences, poorly drained soil, or other factors may be responsible for the low production record, but in any event the grower must furnish his own insurance for a losing game.

But even if all conditions seem favorable, there may yet be a local overproduction problem, and an intelligent reduction in acreage may be desirable to secure profits.

On the other hand, the American orchard industry is a perpetual one and every effort should be made to improve our foreign markets, to secure quotas at least from as many countries as possible, and to devise new markets at home, new products from fruit, and tell the world that fruit in the diet does really mean a greater degree of health.

Advertising endeavors for apples are gaining headway in all parts of the country. All of the advertising stunts ever created, though, will not be effective without the backing of sound, high-quality, well-appearing fruit to satisfy demand created by the advertising. With old, worthless varieties this type of fruit can never be produced.

Every effort is being made to regain our foreign markets by those agencies interested in this phase of marketing, both private and governmental. As these markets are regained, competition from foreign varieties in their own markets will be the chief obstacle facing our growers. We are, then, forcefully brought to the ultimate conclusion that replacement with superior varieties will go far to eventually restore the domestic and foreign prestige of our fruit.

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A "Round Table" Page for Every Grower
AMERICAN FRUIT GROWER

E. G. K. MEISTER

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Home Economics Editor

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AMERICAN FRUIT GROWER

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1370 Ontario St., Cleveland, O.

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Domestic, Except Cleveland, 3 years \$1.00, 1 yr. 50c.
Cleveland and foreign (except Canada) \$1.00 per year.
Canada, 50c per year.

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land, Ohio, under the Act of March 3, 1879. Additional
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CHICAGO REPRESENTATIVES

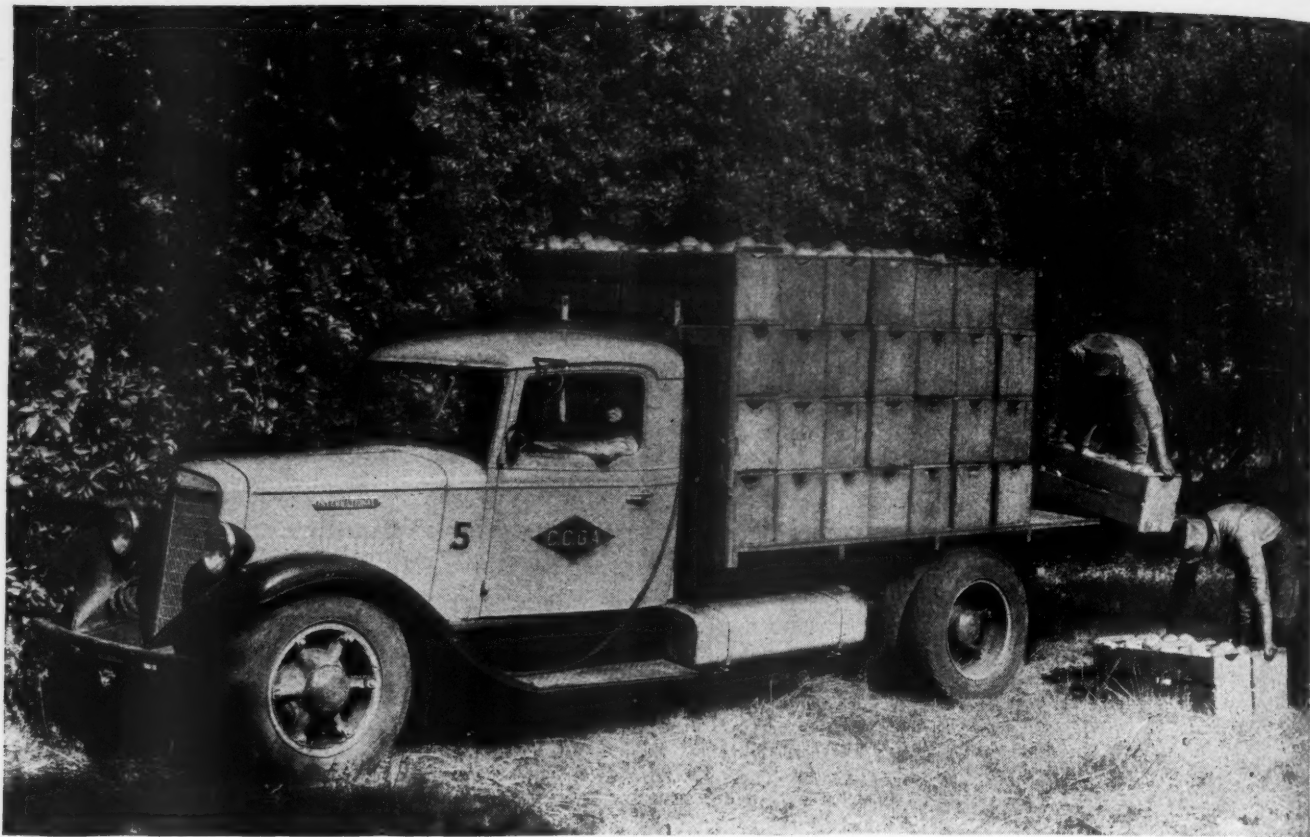
J. C. BILLINGSLEA CO., Phone—Central 0465
133 W. Madison St.

NEW YORK REPRESENTATIVES

ROGER FISON, EASTERN MGR., Phone—Caledonia 5-5300
200 Madison Ave.

F. W. FINN, NATIONAL ADVERTISING
220 East 42nd St. Phone—Murray Hill 2-0997

MARCH, 1936



Your Search for the Right Truck Ends Here

If hauling at low cost is important in your business, then no matter what your requirements may be, there's a truck for your job in the International line. The 26 International models come in a total of 70 wheelbase lengths. Carrying capacities range from Half-Ton to powerful Six-Wheelers.

Each year increasing numbers of fruit and market growers realize that this complete line holds the best solution to their hauling problems. International's new-truck registrations for the year 1935 over 1934 showed a gain nearly three times as large as that of the truck industry as a whole.

Truck operators recognize the extra value that International Harvester Company is able to build

into every truck that bears the name "International." More than thirty years of perfecting all-truck construction means a great deal to every user.

International Trucks are now available with 2-speed rear axles for work in groves, orchards, and fields and on the hard highways. Three models can be supplied: Model CS-30, with 1½-ton capacity; Model CS-35, with 1½ to 2-ton capacity; and Model CS-35-T, a six-wheel truck with trailing axle and 1½ to 4-ton capacity.

Drop in at any International branch or dealer and inspect the trucks designed to do your work. A demonstration will point the way to new profit in your business.

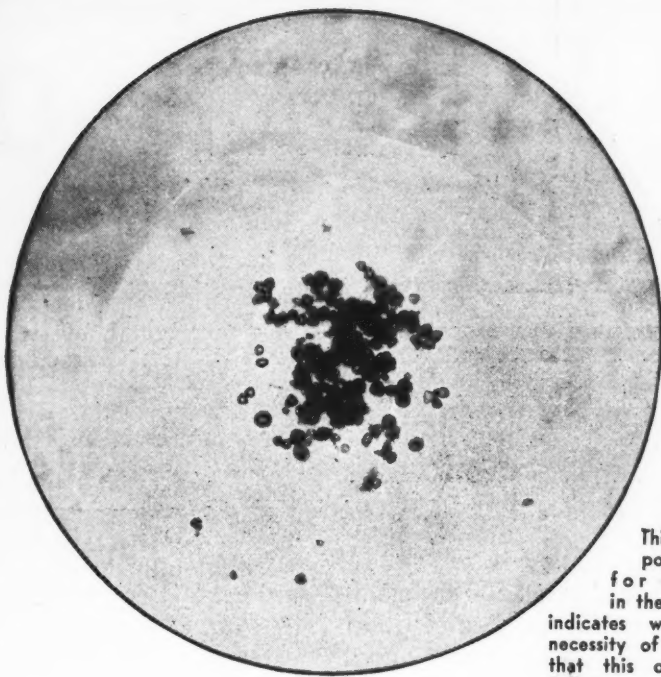
INTERNATIONAL HARVESTER COMPANY

(INCORPORATED)

606 So. Michigan Ave.,

Chicago, Ill.

INTERNATIONAL TRUCKS



This sample of pollen tested for germination in the laboratory indicates without the necessity of field tests that this old variety, Fallawater, is of no value as a pollinizer.

THE well-informed fruit grower should finally have ceased to regard his flowering trees with vague suspicion, for the problem of whether or not those flowers will eventually set fruit is no longer cloaked with the uncertainty that once accompanied it. Today every grower can obtain information of great value in making those adjustments which will insure a full commercial crop of fruit if normal flowering has occurred. Over the course of about 40 years, but particularly during the last 20, a considerable body of facts has accumulated which may be formulated in conclusions serving as important guideposts to practice.

Only a few years ago the emphasis in fruit setting was placed almost entirely upon pollination, and it was this factor which received a flattering amount of attention in any discussion of the subject. It was realized that other influences, such as adequate nutrition of the flowers, affected the set of fruit, but these influences occupied a place which we now know was too meagre in relation to their importance.

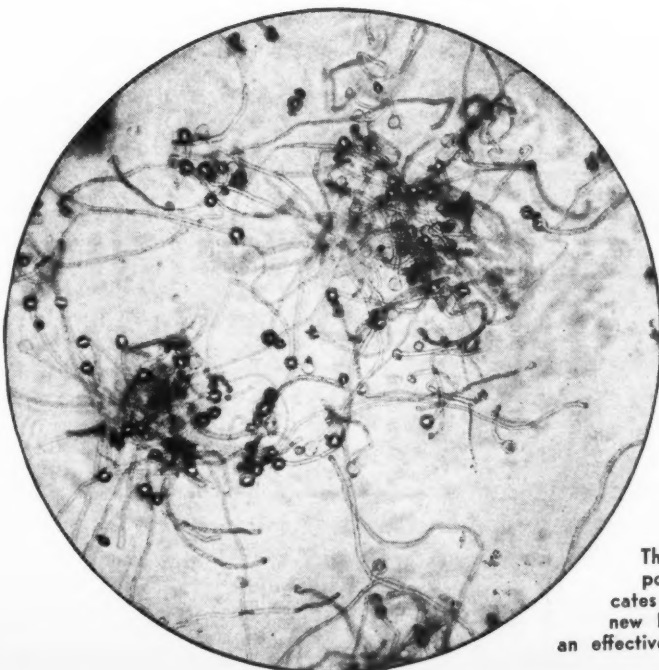
Our changing knowledge of the process of fruit setting, as it appeared at various intervals since fruit growing became an important commercial

A New Understanding of

FRUIT SETTING

By FREEMAN S. HOWLETT

Ohio Agricultural Experiment Station



This sample of pollen indicates that the new Red Spy is an effective pollinizer.

enterprise, has been responsible for the particular viewpoint of each period. As new facts were added and co-ordinated with previous knowledge, the emphasis shifted at one point, and significance altered at another, until from time to time the whole picture appeared to be new.

We now see that the year 1926 marked the end of an era and the beginning of definitely new trends. Up to this time the greater proportion of the experimental work had been with the self and cross-pollination of different varieties. But since 1926 other factors have received the new emphasis. Pollination is no less important, more so in fact, but adequate nutrition of the flowers and the variety factor have come into their own. Each variety is now seen to make its own particular response, conditioned by an inheritance about which we have considerably more information. In consequence, our knowledge of fruit setting rests today upon a more fundamental basis and offers to the fruit grower who is willing to make use of available information, practical suggestions of importance.

The final conclusion from a great
(Continued on page 24)

A BONDED PLAN OF

By DEAN HALLIDAY

FROM the standpoint of advertising, apples have almost literally hidden their light under a bushel basket. Until comparatively recently, the containers in which apples were marketed concealed most of their beauty and appetizing charm of appearance. Consumers bought the "King of Fruits" as they would potatoes. In most cases, the housewife asked for "apples" and got merely what she asked for—just apples. Compared with other food products which bid for her purse and patronage by name identification and "brand" or trade-mark, plus the enticing appearance of modern packaging materials, apples have been something the woman buyer put at the bottom of her shopping list and bought, if by the time she reached that item she did not already have too many parcels to carry home or to her waiting machine. Growers, many of them at least, could spend a profitable half hour or hour on a Saturday afternoon or evening in any grocery store, chain or independent, just "listening in" as the women do their buying. The over-the-counter dialogue is pretty apt to be like this:

Woman: "A package of So-and-So's corn flakes (naming a nationally known brand.)"

Clerk: "Large or small? Have

Buyer Confidence Instead of "Buyer Beware"

UNDER the Michigan Bonded Label Plan, each registered grower furnishes a \$500 Indemnity Bond as a "guarantee of good faith that the contents of my containers were in compliance with all Michigan grading requirements when sealed" and "do agree to indemnify the purchase of my package for loss, should Michigan inspection prove the grade to be poorer than the grade declared."

you tried the So-and-So Company's new large double-value package? Everybody likes it."

Woman: "All right, give me the larger one. And I want a bottle of So-and-So's catsup (again naming a nationally advertised brand.)"

Clerk: "We don't carry the So-

and-So's brand, but we have the Who-is-Who's brand. It's just as good."

Woman: "No, my husband likes the So-and-So's flavor. Never mind, I'll get it later (which means she'll buy the brand she wanted at some other store)."

This type of conversation goes on according to the length of her shopping list and pocketbook—and then she may add:

"And I want some apples!"

Clerk: "What kind, Madam? Cooking or eating?"

Woman: "What kind have you?"

Clerk: "Some nice Rome Beauties. Three pounds for a quarter." (Points to bushel basket or heap piled up in window.) "Good cooking apple!"

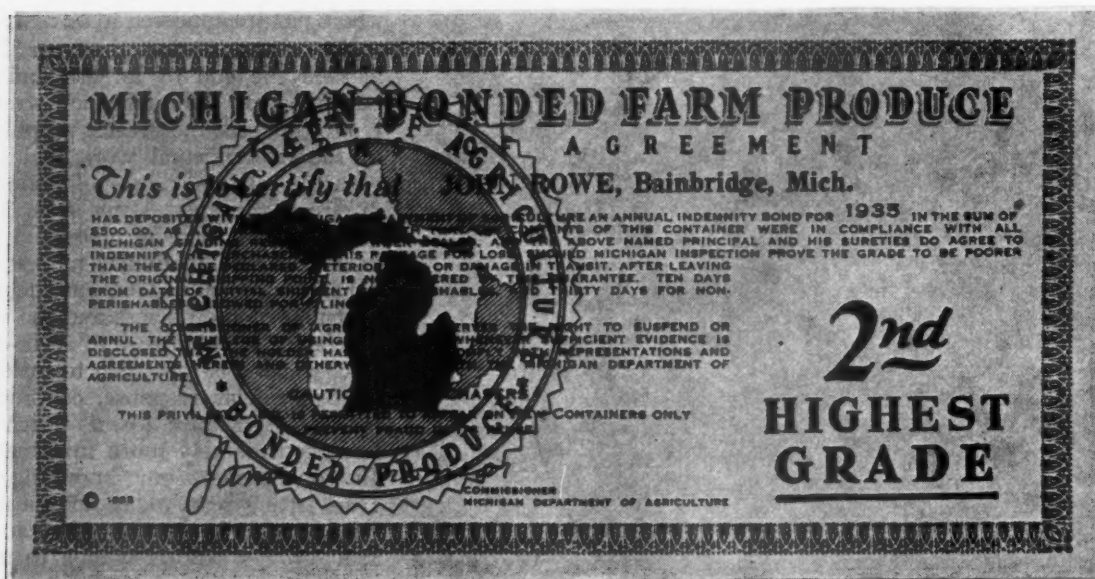
Woman: "Is it a good eating apple, too?"

Clerk: "Yes, Ma'am. Lots of people like it for eating."

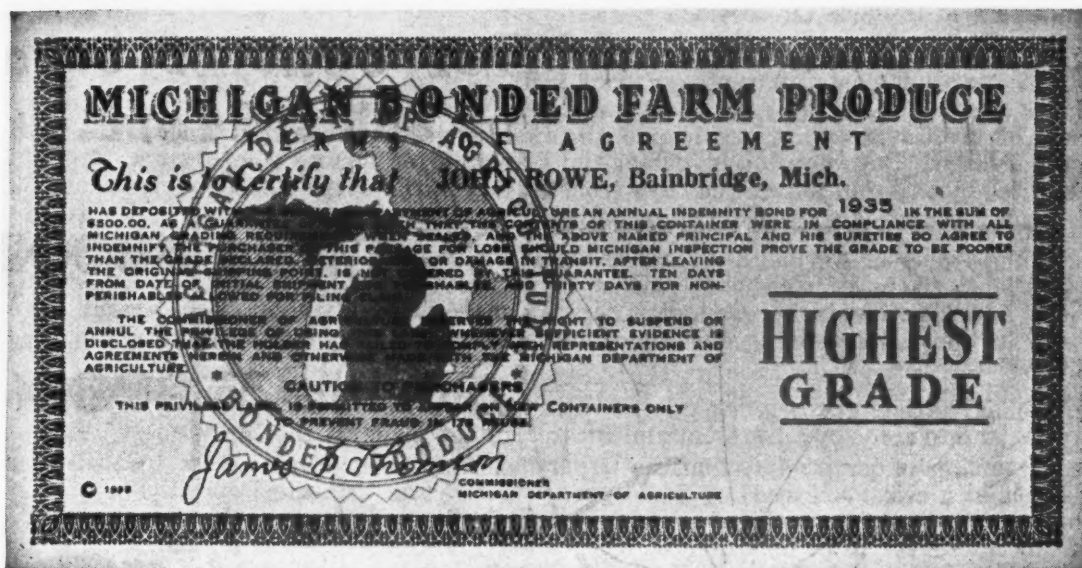
Woman: "What are those apples over there?" (Points to another heap of smaller, less attractive, and rather scrubby looking apples.)

Clerk: "Those are Winesaps, Ma'am. They're good, too. Four pounds for a quarter."

Woman: "Four pounds for a quarter! Oh, I guess they'll be



There will be no mistaking the grade of fruit under the Michigan bonded label plan.



Type of Michigan bonded label to be used for highest grade fruits.

APPLE ADVERTISING

all right. Give me four pounds."

"Yes, 'm," says the clerk, weighing up the four pounds of apples without bothering to tell the woman that while they are Winesaps, they happen to be an inferior variety as well as low grade in size. Apples are apples. And potatoes are potatoes.

The woman takes her bargain apples home. One, or two, or three are eaten by various members of the family. The rest set around until they start to spoil. The woman then "uses them up" in a pie or a batch of apple sauce, and for awhile, sometimes quite awhile, she doesn't buy any more "apples." But in the meantime she buys oranges, grapefruit or berries. She buys them by brand name or territory designation. She buys a good grade and she pays a good price (more proportionately than she paid for the apples). She asks for these other fruits by brand name, and she pays the "brand" price willingly because advertising has made her conscious of the fact that the So-and-So brand IS better, or that certain fruits from certain territories are better—and therefore worth the price.

What is the answer so far as apples are concerned? The answer is, "advertised identification." Brands! Trade-Marks! Variety flavor and uses! Sectional appeal! Education! Sales appeal! Not just shrewd salesmanship in moving the year's crop on to middleman or retailer, but far-reaching sales promotion that makes the consumer want

your kind of apples and thereby, year by year, builds a bigger, better market.

Michigan has the answer to apple as well as other fruit advertising in its "Bonded Label Plan" if the authorities and the growers really get together and carry through.

This Bonded Label plan is being inaugurated by the State Department of Agriculture, through the Bureau of Foods and Standards, "as

Grower Must Live Up to State's Advertising

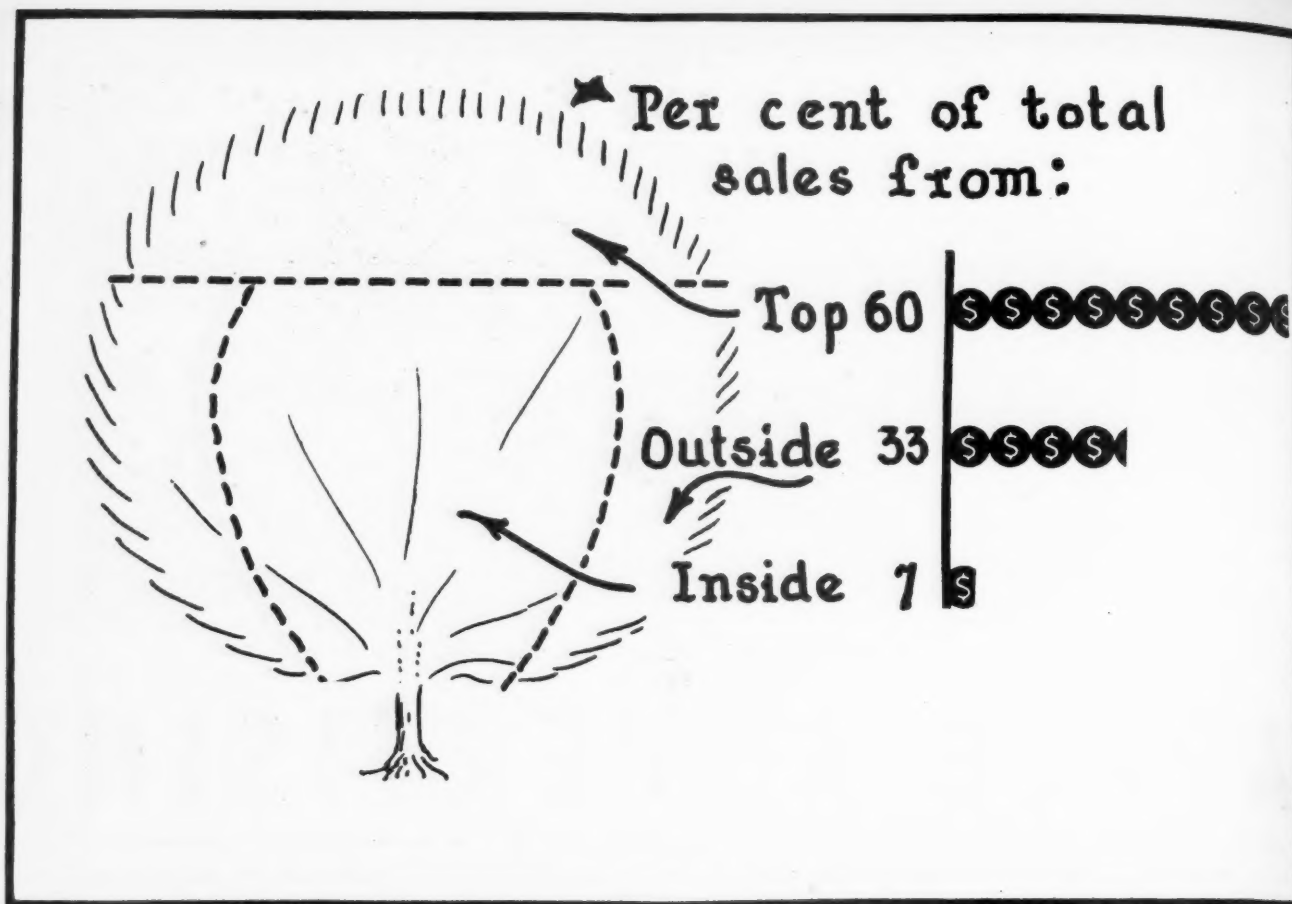
THE Michigan Bonded Label Plan gives the Commissioner of Agriculture the right to suspend or annul the privilege of using the official label whenever sufficient evidence is discovered that the grower has failed to comply with representations and agreements made with the Department of Agriculture. The grower must also agree to surrender all unused labels should his right to use them be suspended or annulled. The grower also must agree that the Bonded Label will appear on new containers only, to prevent fraud in its re-use.

the first step in the advancement of Michigan Farm Products by *distinctive identification.*"

The whole Michigan plan is voluntary, yet it has the merit of protection against the inertia of "voluntary co-operation" which has led to the breakdown of most apple advertising campaigns in the past. The "protection" referred to rests in the fact that the Department of Agriculture is setting up a registration system under state rules and regulations. A grower must be registered in order to obtain the right to affix the state's "grade" labels on his fruit or farm produce. He must pay a fee of \$1 for this registration, and he must also furnish to the state an Indemnity Bond in the amount of \$500. This, of course, is a voluntary action on his part, but the point is that if his competitors market their fruit under the state's bonded labels, it will not be long before he will discover that it is only "good business" to follow suit.

Michigan, in addition to inaugurating the registration system, also intends to carry on an advertising campaign in behalf of the state's farm products. Advertising, of course, is an investment which requires a persistent and consistent expenditure of money. In the past similar campaigns have broken down because voluntary cash contributions from the growers were depended upon to furnish the necessary financing. The Michigan authorities have been wise in incorporating in their plan a provision

(Continued on page 36)



The fruit produced by the top is almost ten times as valuable as that produced by the inside.

"THIN WOOD" PRUNING AND "BRANCH" THINNING OF THE APPLE

By H. P. GASTON

This article is based on trials conducted at the Michigan Agricultural Experiment Station. The results of the pruning trials were recently reported in detail in Special Bulletin No. 265 of that station. That part of the work which has to do with thinning will be covered in a bulletin which will appear at an early date.

are based upon certain related facts regarding the way in which an apple tree bears its fruit, a brief statement of some of these fundamentals will help the reader to better understand what is to follow.

1. The largest apples produced by the average tree grow in the top and outer portions of that tree. The smaller fruits are found in the lower and inner producing area.

2. The best colored apples are produced by the top and outside. Most of the fruit which is deficient in color grows in the lower and inner part of the tree.

3. The top and outer portions of the tree produce the greatest number of apples per unit of producing area. The inner portions produce relatively few fruit.

While each of these facts is of itself worthy of note, their full significance does not become apparent until it is realized that all three tend to make certain areas of the tree very much more productive than others. Experiments have shown that, in terms of dollars and cents, the fruit borne by the top and outer sections of the tree accounts, on the average, for more than 90 per cent of the total returns. The accompanying illustration depicts the monetary returns from fruit borne by three different sections of the average tree. This graphic representation will help the reader to appreciate fully the considerable differences which exist in the productivity of different areas.

Although a rather simple study, the facts brought out by the data just presented not only explain why currently practiced methods of pruning are so unsatisfactory, but they suggest a clue to better methods. Conventional pruning, which has "thinned out the top and outside of the tree in order that light might reach the inside," has removed an appreciable portion of that part of the tree which accounts for over 90 per cent of the total monetary returns. This has been done in order that sunlight might reach a part of the tree which accounts for less than 10

(Continued on page 22)

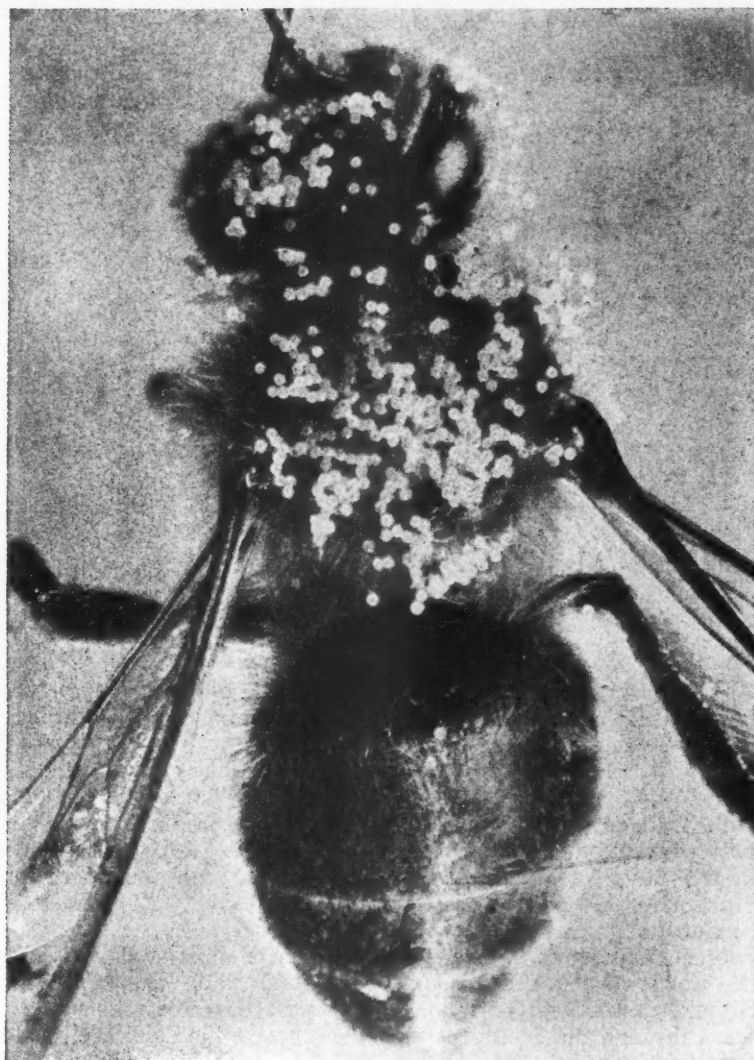
It cannot be denied that pruning as commonly practiced during the past decade usually improved the grade of fruit subsequently produced. It has been assumed that profits increased as the grade improved. Recent checks, however, have revealed the fact that when conventional methods are employed, improvement in grade is usually attended by material reductions in yield, which in the final analysis means not profit but financial loss. The ideal method would, of course, improve the grade without reducing the volume of salable fruit. In addition to accomplishing this desirable end, the "Thin Wood" method of pruning, recently developed at the Michigan Agricultural Experiment Station, has other advantages which make it appeal to the grower. The method is so simple, logical and effective that it is being rapidly adopted by enterprising growers not only in Michigan but in other states as well.

It has long been known that differences exist in the general character and amount of fruit produced by different parts of the tree. The work here reported was the first attempt, however, to make such information the basis of a definite pruning system, and to recommend it as such. Inasmuch as both "Thin Wood" pruning and the "Branch" method of thinning

When and How BEEES CAN INCREASE THE FRUIT CROP

By E. R. ROOT

Editor of *Gleanings in Bee Culture*



A honeybee covered with pollen (Courtesy of Missouri Agricultural Experiment Station and Cornelia Clarke)

SOME years ago it was believed by many fruit growers that honeybees were of doubtful value in orchards and that what good they did was more than offset by the damage they did in puncturing ripe fruit, especially peaches and grapes. This opinion still prevails among certain groups who have not taken time to consult experiment stations or look over government bulletins. While bees will suck the juices from ripe and cracked fruit, or fruit punctured by insects or birds, they will not, in fact, cannot, puncture the skin of the fruit.

It hardly seems necessary in a publication of this kind to set forth the proof that bees can and do very markedly increase the fruit crop when conditions are right, and I do not take the space. It is significant, however, that there is not an experiment station that does not recognize the value of bees in increasing the crops of certain deciduous fruits.

Fortunately, experiment stations have shown that either bouquets of the blossoms of compatible varieties must be placed among the trees when they are in bloom or that the tops of those

trees which are inter-sterile to other trees near-by must be top-grafted with a compatible variety of twigs that will make it possible for bees to inter-pollinate blocks of trees that are inter-sterile to varieties already planted. Of course, the more modern practice of setting out orchards is to consult the experiment station in the locality and plant among the varieties desired a compatible variety in sufficient numbers so that bees can bring about the proper setting of the fruit.

On this question of bouquets, what varieties and how to prepare them, consult bulletin No. 34 by Hutson of the New Jersey Experiment Station, or bulletin No. 404 of the Ohio Experiment Station, Wooster, Ohio, or the secretary of the Michigan State Horticultural Society, Lansing, Mich.

But even when the conditions above mentioned have been met, unless there are enough bees of flying age, they cannot adequately pollinate the trees. Weak colonies, with only enough bees to cover three or four combs, and most of them too young to fly, will be of little value. The hives should be full of mature bees and that means

that every comb (10 of them to a hive) should be covered with bees. Better, yet, the colonies should be two-story, and one such to every acre of mature trees. On this point, consult bulletin No. 190 by Phillips of Cornell University, Ithaca, N. Y. A two-story colony, such as here described, is worth three single-story colonies. The rental price will be greater but better pollination of the blossoms will be effected.

It is a regrettable fact that many colonies of bees are destroyed or rendered valueless for pollination when trees are sprayed with arsenicals while in bloom, or when poisonous dust is applied and the wind carries it to trees in full flower. Even when the work is done at the right time, these poisons often fall on the cover crops, like sweet clover or red clover. When these are in bloom the bees gather the nectar and are poisoned. The fruit grower should guard against "killing the goose that lays the golden egg." By consulting the nearest experiment station, most if not all of this trouble can be avoided.

(Continued on page 34)

AMERICAN POMOLOGY

*A Page Conducted in the Interests of the
American Pomological Society*

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Edited by H. L. LANTZ, Secretary

WINTER MEETINGS SUCCESSFUL

ANNUAL conventions of state horticultural societies have been unusually successful this winter, as indicated by the programs which contained many instructive papers dealing with fruit growers' problems. The first convention report to reach my desk is that of the Virginia State Horticultural Society. Secretary W. S. Campfield certainly is prompt and does an excellent job in getting out the report of the Virginia meetings. Secretary Campfield has made several tours through the South to study the apple markets of that section, and presented a very pertinent report of his findings to the convention at Roanoke on December 10-12. Among other things he stressed the great need of considerably expanding the markets for apples.

At the risk of being untimely, but contemplating that we should always be studying markets, we are herewith presenting a few paragraphs from Secretary Campfield's report which seem pertinent. Secretary Campfield says:

"With but few exceptions, the dealers in all southern markets except Knoxville urged that the growers of the Virginias size to one-fourth inch and stamp the minimum count on the basket. While the writer does not urge that all growers adopt this practice at once, I am very firmly convinced that it would be highly desirable for some of the larger growers to start the practice of one-fourth-inch sizing and stamping the minimum count on the basket with the higher classed varieties, such as Delicious, Stayman, Black Twig and Winesaps. Perhaps also on Jonathan and Grimes. It should not be attempted, however, unless the grower has sufficient quantity of a variety to enable him to load out straight cars of one size or at the most one or two sizes. Different markets in the South prefer different

sizes and it is very probable that the full range of sizes can be readily disposed of provided a fairly broad distribution is attempted.

"Advertising is unquestionably one of the prime needs of the apple industry. The type of advertising that would reach the consuming public and create in their minds a desire for apples from the Virginias because of their superior flavor, health qualities and wide adaptability to culinary usage, would undoubtedly greatly increase the daily use of apples. Such advertising could be carried on through the newspapers, over the radio, by cooking schools, posters and general missionary work of representatives of the industry, but to be fully effective it should be backed by efficient merchandising, which means that apples should be sold through fewer marketing channels. The present practice of individual growers quoting the market promiscuously results in more or less chaos and a weak market structure, particularly in years of heavy production. A few growers or one or two dealers under-quoting the market causes buyers to hesitate and delay in placing their orders. Even though they may realize that the prices are amply low, nevertheless they wonder if tomorrow or next week another set of growers will not become panicky and quote still lower prices, which would result in their having to assume a loss if they bought today. There is no stability to the apple market of the Virginias because of the general practice of uninformed and panicky quotations."

Personalities

The Connecticut Pomological Society in its annual convention at Hartford paid a glowing tribute of respect to their faithful and ever active secretary, H. C. C. Miles of Milford. Mr. Miles has served the Connecticut

Pomological Society as its secretary for 38 years, a most enviable and perhaps unequalled record of service among state society secretaries. The Connecticut society did the unusual—it nominated Secretary Miles for its president for 1936 and elected him by a hearty, unanimous vote, and then re-elected him to succeed himself as secretary. This election of Mr. Miles to the presidency did him high honor for the long term of fine service rendered to the society.

For a number of years Mr. Miles has also served as treasurer of the American Pomological Society.

Proceedings

The Proceedings of the Hartford meeting are being prepared as rapidly as possible. Renew your membership at once, as you will want this fine report. It will contain many more papers than previous reports, and also the discussions which took place. The Proceedings will be a fine addition to your horticultural library.

Plantings Justifiable

According to its preview of California farm crops, the California Extension Service states that relatively large plantings of clingstone peaches in that state during the next few years are justifiable due to the crop and acreage reductions caused by unmarketable surpluses and the depreciation of old orchards. Also that the demand for canned clingstones was from 15 to 20 per cent better during the past season than in 1934. The canned product is the principal outlet for the crop.

Pie Trade Ruling

The Chicago Board of Health last fall ruled that apples which are to be peeled and cored for use by pie bakers had to meet the federal residue tolerance regulations when they reached the market. This would serve to answer a question in the minds of some growers as to the residue tolerance on apples destined for the pie trade.

COMING!



AMERICAN FRUIT GROWER

DIRECTORY EDITION for 1936

By JONAS HOWARD

REPLYING to the many letters of inquiry, AMERICAN FRUIT GROWER takes pleasure in announcing that its Annual Directory Edition is already being compiled. It will be published in June, and it will be found to be even more complete, more comprehensive and more useful as a handy reference and buying guide than last year's widely acclaimed edition.

Readers, and advertisers, will find the coming 1936 Directory Edition more thoroughly indexed than ever before, with more extensive classifications and listings covering every conceivable type of orchard needs, tools, implements and supplies required by the progressive fruit grower.

The Directory Number will not only contain a complete list of orchard supplies and tools, but it will tell you who manufactures each article and

who stocks and sells it. By referring to this issue of AMERICAN FRUIT GROWER, you can select, at a glance, your nearest source of supply.

As a service to readers, the coming June Directory Number will again make it possible for growers to obtain special literature, booklets and catalogs on all phases of orchard operations. This department of the Directory Number serves, in effect, as a complete buyer's guide to a grower's every season requirements.

In preparing and placing this Directory Number in your hands, AMERICAN FRUIT GROWER realizes that the purchasing requirements of the commercial fruit grower have increased enormously in recent years. This is due, among other things, to the rapid multiplication of insects and tree diseases, which in turn calls for a

greater use of tools and materials for preventive warfare.

The money-saving possibilities of grower-owned cold storage facilities also calls for study and consideration of investment in building construction and materials, refrigerating units, insulating materials and accessories.

Aware that the next important development in commercial fruit growing is scientific marketing as well as scientific growing, AMERICAN FRUIT GROWER will devote an important part of the June Directory Number to discussion of the various phases of modern marketing and effective sales promotion. The issue will contain illuminating articles on packaging, advertising and distribution.

In articles on modern packaging, growers will learn, perhaps for the first time, how the research laboratories of the country are searching out new materials for the better display, wrapping and protection of fruits—materials which of themselves are proving to be master salesmen. New and ingeniously contrived unit packages which almost compel the consumer to buy fruit also will be described and pictured.

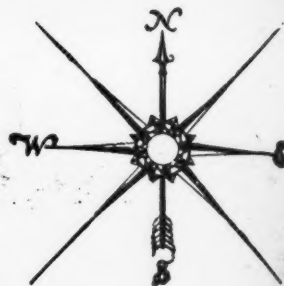
Since growers' groups in various parts of the country are giving serious attention to various forms of fruit advertising, from the printed word to broadcast by radio, a survey and study of the various advertising and distribution campaigns now in operation will be presented.

In the June Directory Number and Buyer's Guide every alert grower will find handy, for ready reference, the things he should know and the things he needs for better and more profitable fruit growing.

Watch for it—for you'll have occasion to use it again and again, both as a time and money saver.

STATE NEWS

FROM NEAR AND FAR



MASSACHUSETTS—Keen interest and attendance that was better than usual were features of the 42nd annual meeting of the Massachusetts Fruit Growers Association, Inc. Appearing twice on the busy educational program was W. S. Campfield, secretary of the Virginia Horticultural Society, whose talks covered production and marketing, the latter being pertinent because of the recent export trade barriers.

Lawrence Howard, 1935 president of the New York State Horticultural Society, spoke on the problems in fruit production encountered by Hudson Valley growers. Dr. Philip Garman of the Connecticut Agricultural Experiment Station talked on the control of red mite and leaf hopper. Two envoys from the New York station were present and gave interesting discussions. They were Dr. R. C. Collison, talking on soil management, and Dr. C. F. Phillips, whose subject was the importance of bees to the apple grower. Local discussions were led by members of the staff of Massachusetts State College, including R. A. Van Meter, J. K. Shaw, W. H. Thies, E. W. Bell and F. C. Sears. Officers elected for 1936 are, president, George A. Drew, Westford; vice presidents: John E. Rice, Marlboro; Arthur M. Howard, Pittsfield; D. Walker Cheney, Brimfield; Hamilton Lincoln, North Brookfield; George A. Marshall, Fitchburg; and R. A. Van Meter, Amherst.—**WILLIAM R. COLE**, Sec'y-Treas., Massachusetts State College, Amherst.



INDIANA—In the large Manufacturers' Building on the Indiana state fair grounds in Indianapolis, growers recently held the 75th annual meeting of the Indiana Horticultural Society.

The program featured round table discussions on such important subjects as codling moth and other insect control, apple scab, marketing, washing and spray residues and the spray calendar for 1936.

In the absence of Dr. H. E. Barnard, secretary of the National Apple Institute, his assistant, I. L. Miller, spoke on the work of the institute. An interesting and educational exhibit was set up by Miss Edith Hoffman, secretary to Dr. Barnard, showing the promotional and educational program being executed by the institute.

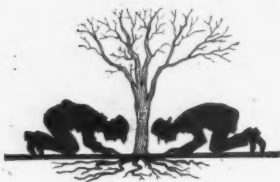
The principal out-of-state speaker on the program was Dr. B. F. Driggers, state entomologist for New Jersey, who discussed the codling moth situation in the East. U. S. D. A. workers from the government station at Vincennes were represented by L. F. Steiner, speaking on the codling moth investigations, and Leslie Pierce, whose subject was bitter rot control.

Those from Purdue University who appeared

on the program were C. L. Burkholder, R. C. Baines, J. J. Davis, C. E. Marshall, Monroe McCown and Everett Wright.

Growers taking part in the program were W. C. Reed, Vincennes; H. E. Mathews, La Porte; W. E. Buss, Vincennes; Dave Simpson, Vincennes; Merle Troth, Orleans, and Frank Street, Henderson, Ky.

Newly elected officers of the Indiana society are: Homer J. Coffing, Covington, president; M. S. Troth, Orleans, vice-president.—**EVERETT WRIGHT**, Sec'y-Treas., Lafayette.



MARYLAND—That 60 per cent of the roots of an apple tree are in the upper 16 inches of soil was pointed out by Dr. L. P. Batjer of the West Virginia Experiment Station while speaking before the 38th annual meeting of the Maryland State Horticultural Society which was recently held at Hagerstown. Other speakers on the program were eight workers from experiment stations, six from the University of Maryland and neighboring schools and two from the U. S. D. A. Presidents of three neighboring societies gave experiences on the work of their societies. They were J. Y. McDonald, West Virginia; C. Purcell McCue, Virginia; and H. F. Hershey, Pennsylvania.

Officers elected for the coming year are: president, C. E. Bryan, Havre de Grace; first vice-president, Carlyle Barnes, La Plata; second vice-president, G. William Gardenhour, Smithsburg.—**A. F. VIERHELLER**, Sec'y-Treas., College Park.



KANSAS—Small fruit production blazed to the front when a school was held recently for small fruit producers of northeast Kansas in the office of the Wathena Fruit Company, Wathena, Kansas. At the meeting, which is an annual affair, principal speakers were W. G. Amstein and L. W. Patton, extension horticulturists; Erwin Abmyer, in charge of experimental work in northeast Kansas, and P. G. Lamerson, entomologist for the northeast Kan-

sas Experiment Fields. The latter stated that the red spider was Insect Enemy No. 1 for the small fruit producer.

Sub-zero temperatures in the northeast section of the state indicate that there are probably no live peach buds remaining in that section. Dumping of frozen apples on Kansas markets was brought to the attention of the State Board of Health which in turn wired all shipping points that further shipments would be confiscated on arrival.—**GEORGE W. KINKEAD**, Sec'y, Topeka.

ILLINOIS—Heavy scab infestations and the lack of a good bud set point to a smaller apple crop for this state during the next season. An inventory of the cold damage is not possible yet, but there probably will be some trouble from this source. Centralia and northern sections will not have a peach crop this year due to the low temperatures. Unfavorable weather conditions in 1935 prevented strawberries from forming a heavily matted row, and only a fair crop can be estimated for Illinois in 1936. Pan grading of the berries last year gave fine results.—**JOE B. HALE**, Sec'y, Salem.



NEW JERSEY—Lemuel Black of Hightstown, N. J., won the first leg on the new silver Sweepstakes Apple Trophy offered by the New Jersey State Horticultural Society for the greatest number of points won by a single entrant's exhibits in the apple show held recently in connection with the annual Agricultural Week at Trenton. Black, who entered nine different varieties in the five divisions of the show, was awarded 21 firsts, eight seconds, one third and two division sweepstakes.

The show's principal awards were divided among four exhibitors. Apples grown by Preston T. Roberts of Moorestown took nine firsts, nine seconds and three thirds. Nau Brothers of Hightstown won five first, two second places and four third prizes. John H. Hankinson of Pennington was awarded three second and four third place honors.

(Continued on page 18)

"Black Leaf 40"

"BLACK LEAF 40" IS ECONOMICAL 50 POUND DRUM Makes

4000 gallons of spray

(at 1 pint to 100 gallons of water)

5000 gallons of spray

(at ¾ pint to 100 gallons of water)

6000 gallons of spray

(at ¾ pint to 100 gallons of water)

8000 gallons of spray

(at ½ pint to 100 gallons of water)

See Your Spray Material Dealer



**Insist on
ORIGINAL
FACTORY-
SEALED
CONTAINERS
for full
strength**

INSECTS such as Green Aphis, Red Bug and Leaf Hopper damage foliage and dwarf and gnarl fruit. The grade of fruit you produce and the price you get for it, therefore, depend largely upon the spray protection you provide. "Black Leaf 40" used as recommended in your State, kills these insects—by contact and by fumes.

BETTER CODLING MOTH SPRAYS: "Black Leaf 40" added to lead arsenate or "summer-oil" codling moth sprays fortifies these sprays. Lead arsenate kills the larvae after they eat. "Summer-oil" kills the eggs. "Black Leaf 40" kills mature eggs and larvae, and if lime is added, it kills adult moths. For an effective kill and to save extra sprayings, add "Black Leaf 40" to all your codling moth sprays.

"BLACK LEAF 40" IS EASY TO USE—Concentrated, effective, easy to mix and apply. Of vegetable origin—it is not caustic—does not "burn" man, horses, trees or crops. "Black Leaf 40" is volatile and so "fumes off" (evaporates) from the foliage and fruit. "Black Leaf 40" is sold by spray material dealers everywhere.

3646

Camera!



Clyde Holland, Chardon, Ohio (left), took a recess from the program of the Ohio meeting for a smoke and met M. W. Baker (center), head of the Federal-State Inspection Service at Columbus, and Dr. F. S. Howlett of the Ohio station and well-known AMERICAN FRUIT GROWER author.



Prof. W. J. Paddock, veteran horticultural instructor of Ohio State University (center), pauses to talk with J. S. Houser, chief of the Entomology Department of the Ohio station (left), and Dean W. Tresch, fruit and vegetable inspector.



Sam Wilson (left), well-known Cleveland commission merchant, with Dr. J. H. Gourley, head of the horticulture departments of Ohio State University and the Ohio station (center), and Frank H. Beach, Ohio extension horticulturist.

STATE NEWS

(Continued from page 16)

BUCKEYE STATE MEETING

OHIO—"Low grade fruit is the greatest enemy of the commercial grower," stated Sam Wilson, well-known Cleveland commission merchant before the 69th annual meeting of the Ohio State Horticultural Society which was held at Ohio State University January 27-31. More than 250 were present for most sessions, with nearly 200 in attendance at the banquet, where Hugh Diamond of Galion was the principal speaker.

Leading the out-of-state speakers on the program was V. R. Gardner, director of the Michigan Agricultural Experiment Station, who talked on trends and adjustments of the fruit industry. When the group met in joint session with the Ohio Vegetable Growers Association, they were addressed by Henry D. Greene, Public Relations Department of the American Fruit and Produce Auction Association of Sacramento, Calif., who spoke on the terminal produce auction markets. Following this talk, C. W. Hauck, Department of Rural Economics of Ohio State University; E. B. Tussing, extension horticulturist of Ohio State University; W. H. Matthews, fruit grower near Salem, and Lloyd Stacy, fruit and vegetable grower of Marietta, discussed farmers' and fruit and vegetable auction markets.

J. S. Houser, chief of the Department of Entomology of the Ohio Agricultural Experiment Station, and R. B. Neiswander of the same department presented a paper on the control of apple flea weevil.

A review of the apple disease situation for the state and a presentation of the spray program for peaches, cherries and stone fruits was given by Dr. H. C. Young, chief of the Department of Botany, Ohio Agricultural Experiment Station.

The spray residue situation was touched on by Stanley Porter, county agent of Lawrence County, when he told how the growers of that section were coping with the residue problem, and by Earl W. Hanefeld, director, Ohio Department of Agriculture, when he spoke on the state's viewpoint on the residue problem and told the growers that the cooperation of the department was at their disposal for the solution of the residue problem in Ohio. C. W. Ellenwood of the Ohio Agricultural Experiment Station also told of experimental results obtained at the station with spray residue removal.

The rôle of the experiment station in aiding the fruit grower was explained by Dr. J. H. Gourley, chief of the Department of Horticulture, Ohio Agricultural Experiment Station, who also talked on recent viewpoints on orchard fertilization and soil management practices.

Dr. F. S. Howlett of the Department of Horticulture at the Ohio station served in dual capacity on the program when he talked on his observations and experiences with pear culture and varieties in Ohio and on water relations in the apple orchard.

In the absence of F. H. Ballou, Ohio station, due to illness, the paper which he prepared in collaboration with I. P. Lewis of the Ohio station and fruit grower of New Waterford, on experiences with the newer modified spray formulas, was read to the society by Mr. Lewis.

Two prominent Ohio growers offered discussions of their experiences with refrigerated apple storages on the farm when C. S. Holland, Chardon, and E. G. Dean, Geneva, talked on this subject.

A talk which aroused much interest was that on the elimination of unprofitable trees and varieties, given by W. W. Ellenwood, assistant director of the Ohio Department of Agriculture.

Experiences with the newer peach varieties were presented by Dr. Leon Havis of the

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Department of Horticulture of the Ohio station. He told of the work being done at the station and at the orchards of growers in various sections of the state with the new peach varieties.

The business side of orcharding was presented by Ford Quigley, fruit grower of Chagrin Falls, in his talk on keeping orchard cost records.

One of the outstanding features of the meeting was the question boxes which were held at the start of the sessions and led by W. H. Matthews.

Officers of the society for the ensuing year are H. N. Scarff, New Carlisle, president; Clarence J. Neal, Cleveland, vice-president; F. H. Beach, Columbus, secretary; and C. W. Ellenwood, Wooster, treasurer. W. J. Welday, 1935 president of the society and a fruit grower at Smithfield, was placed on the executive committee.

MINNESOTA—A new variety that has high color and is hardy has been the object of searchers for apple varieties in the north central states for years. The University of Minnesota Fruit Breeding Farm has named this variety Beacon. It ripens a few days later than Duchess. Last season fruit of this variety brought \$2 a bushel on the Minneapolis market when the best Duchess sold for 75 cents. At the same time a new, large-fruited plum from the same station was named Ember. This plum, formerly known as Minn. No. 83, is a late plum that hangs well to the tree and is of better canning quality than most of the Minnesota hybrid plums.

The annual horticultural short course at University Farm, St. Paul, is scheduled for March 25-27. Fruit day will be on March 27. There is no registration fee and all growers are cordially invited to attend.

New officers for 1936 of the State Horticultural Society are T. L. Aamodt of St. Paul, president, and Ben F. Dunn of Rochester, vice-president. R. S. Mackintosh was re-elected secretary-treasurer. Officers of the Minnesota Fruit Growers Association re-elected for two-year terms are Ben F. Dunn of Rochester, president; Fred W. Braden of Wayzata, vice-president.—J. D. WINTER, Sec'y-Treas., Minn. Fruit Growers Assn., St. Paul.

IDAHO—While speaking before the 41st annual meeting of the Idaho State Horticultural Association held recently at Boise, Dr. Leif Verner, head of the Department of Horticulture, University of Idaho, said, "Much can be done to maintain for the apple such favor as it now enjoys by offering only high-grade fruit, properly graded and packed." This statement was made during his talk on production trends and costs.

Representatives of the U. S. D. A., the University of Idaho and various shippers' associations and retail store companies held important places on the program. Another feature of the meeting was a ladies' program, with subjects of special interest to wives of fruit growers.

The exhibit division, under the direction of George Ames of Emmett, filled all available space on three floors of the State House. Prizes were given for the best commercial exhibit. J. L. Palmer, Lafe Boone and S. C. Vandenburg, all of Boise, placed in the order given for prizes in the apple variety identification contest.

Officers for the new year were elected as follows: President, Darwin Symms, Huston; vice-president, J. C. Watson, Parma; treasurer, George Yost, Emmett.—W. H. WICKS, Sec'y, Boise.

NEBRASKA—"The standardization of marketed products is necessary whether they be fruits or suits of clothing," said Prof. E. S. Fullbrook of the Business Administration Department of Nebraska University, while addressing the 66th annual meeting of the Ne-

(Continued on page 26)

Camera!



A prominent Cleveland commission dealer, Bob Blair, center, talks over the marketing situation while in attendance at the Ohio meeting with W. E. Young, left, of Waterville, and W. Dale Hilbish of Painesville.



H. N. Scarff, left, of New Carlisle, was elected 1936 president of the Ohio society and is being congratulated by C. E. Drumheller, center, of Buena Vista and H. C. Price of Newark, Ohio.



Frame Brown, center, prominent Worthington, Ohio, grower, talks over the meeting of the Ohio Society with two of his orchard men, Marion Lazelle, left, and Murrian Sellar.

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80 PLUS MICROGRAMS

SURFACE ARE NECESSARY

The experience of many state entomologists and the results of investigations of Sherwin-Williams Research Department have demonstrated conclusively the absolute necessity of using an Arsenate of Lead that will deposit 80 plus micrograms of arsenic per square inch of apple surface, in order to control codling moth.

Many Arsenates of Lead will not meet this requirement whereas Sherwin-Williams Arsenate of Lead will do so. You may ask why? The answer is—because Sherwin-Williams Arsenate of Lead does not contain a deflocculator or any other material that would tend to decrease the deposit of arsenic on apples.

Sherwin-Williams Arsenate of Lead contains not less than 98 per cent of actual Arsenate of Lead which, when sprayed on apple trees at standard dilutions, will deposit more than 80 plus micrograms of arsenic per square inch of apple surface—the minimum amount necessary to control Codling Moth.

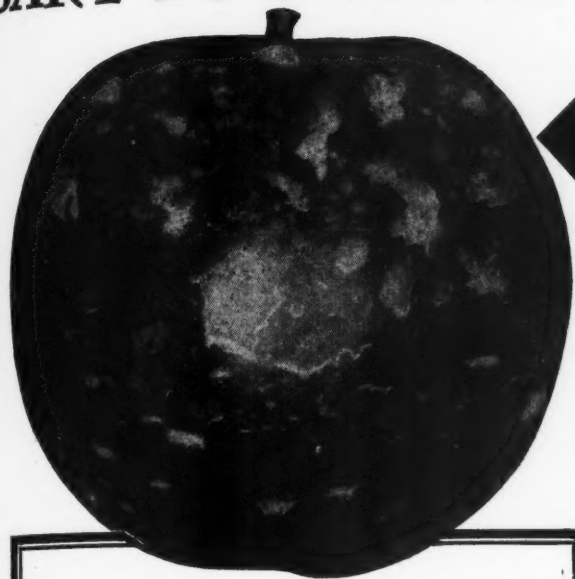
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INSECTICIDE DEPARTMENT
101 PROSPECT AVE. CLEVELAND, OHIO

SHERWIN-WILLIAMS

SPRAY AND DUST MATERIALS

SHERWIN-WILLIAMS ARSENATE OF LEAD NECESSARY TO CONTROL CODLING MOTH



LOOK AT THIS APPLE

FOR PROOF OF HIGH DEPOSIT

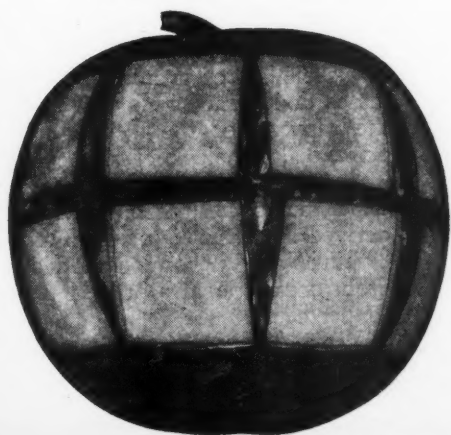
This apple was selected from a heavily loaded apple tree that had been sprayed with a standard spray outfit. Thousands of apple growers are getting similar results with Sherwin-Williams 98 per cent Arsenate of Lead.

Make your plans now to use Sherwin-Williams Arsenate of Lead this spring and summer—the largest selling Arsenate of Lead in this country.

Apple sprayed with S-W Arsenate of Lead alone, using 2 pounds per 100 gallons. Note the even deposit. 10 to 18 test squares of skin were removed from many apples selected at random. (See illustration below.)

Micromilligrams As_2O_3 / sq. in.

	After Spraying
Top	90
Bottom	80
AVERAGE	85

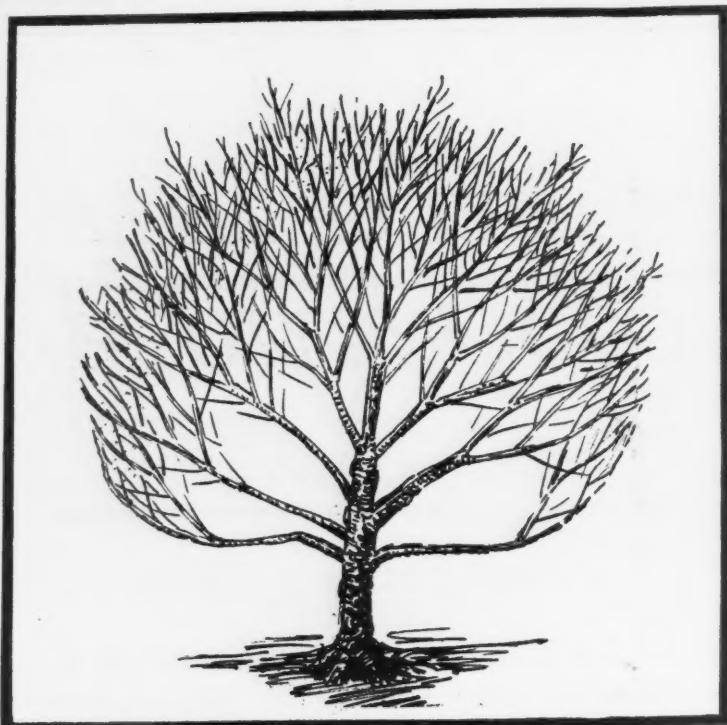


USE THIS FREE CODLING MOTH CONTROL SERVICE

Our Spraying Service Department offers a new practical plan for better Codling Moth control. This plan will tell you more about Sherwin-Williams Arsenate of Lead, when and how to apply it and how to trap Codling Moths and band your trees to catch the worms . . . If you want the latest practical information on better Codling Moth control—write to Insecticide Department, THE SHERWIN-WILLIAMS CO., 101 Prospect Avenue, Cleveland, Ohio.



SHERWIN-WILLIAMS SPRAY AND DUST MATERIALS



The vigorous, productive top has been left. The thin, weak wood has been removed from the lower and inner part of the tree.

"THIN WOOD" PRUNING AND "BRANCH" THINNING

(Continued from page 12)

per cent of the total returns. This has in effect amounted to discarding many of the best apples for the purpose of obtaining a limited improvement in the quantity and grade of the poorest fruit. Pruning of this type is worse than useless.

If it were true, as some advocates of conventional pruning seem to believe, that the thinning of the top and outside enables the inner portion of the tree to produce abundant crops of fancy fruit, the system would have some merit. This, however, is not the case. Though the grade of fruit produced is usually somewhat improved, any considerable improvement is, as has already been stated, almost invariably attended by material reductions in the yields of the better grades.

Reduced to its simplest terms, "Thin Wood" pruning consists in removing from the tree the "thin," relatively unproductive wood. The following characteristics make the identification of this wood easy.

1. The four-year-old wood of "thin," weak branches is less than two-eighths inch in diameter.
2. Weak wood always makes short terminal growth.
3. "Thin" wood grows in a downward direction.
4. Most of the "thin," weak wood is found in the lower, inner part of the tree.

Although the same results may be

accomplished in any one of several different ways, the writer usually divides the work of pruning a given tree by the "Thin Wood" method into three steps.

The First Step—There is in almost every bearing tree which has not been previously pruned by the "Thin Wood" method a number of comparatively large limbs which give rise to a number of smaller branches, practically all of which are of the "thin" wood type. Though some of these branches may grow more or less upright, most of them are usually found growing in a horizontal or even downward direction. As a first step, the large branches, most of whose laterals fall into this class, are removed. This is done with a saw. The first cut is made at the most convenient point, after which the worker proceeds around the tree, making all the necessary cuts of this type. The removal of these branches makes the subsequent work easier.

The Second Step—After having made the saw cuts just described, many growers prefer to discard the saw and do the work which remains with lopping shears, though some may prefer to use hand shears or to continue with a saw. With the lopping shears, the worker moves once more around the trunk of the tree, this time removing the "thin" wood which still remains in the lower center.

The Third Step—Most of the work is done in what is here described as the first and second steps, and in the case of younger trees it only remains for the worker to step up on the lower branches of the tree and remove any "thin" wood which could not be reached from the ground. In the case of older and larger trees, some climbing and the use of a ladder may be necessary. When the "thin" wood has been removed from the upper, interior part of the tree, the job is finished. The accompanying sketch showing the completed tree in cross section will help the reader to visualize what has been done. The figure depicts the tree in cross section and not as it would appear in the orchard.

It will be observed that the vigorous, productive top has been left untouched and that only the relatively unproductive wood found in the lower and inner part of the tree has been removed.

The removal of the "thin," weak wood automatically eliminates many of those apples which would otherwise develop into small, poorly colored, inferior fruits. The elimination of this undergrade fruit is, of course, a material advantage.

"Thin Wood" pruning materially increases the yield of fancy fruit. More important even than the reduction of the amount of undergrade fruit is the effect of the method in increasing the quantity of large apples. Evidently, the removal of "thin" wood materially increases the capacity of the tree to develop the fruit that remains into still larger specimens.

"Thin Wood" pruning improves the color grade. This is accomplished by removing the wood upon which the under-colored apples would grow and leaving that which normally bears well-colored specimens.

"Thin Wood" pruning increases total monetary returns. It is obvious that a method of pruning which eliminates undergrade fruit and increases the capacity of the tree to produce fruits of large size and good color will increase the monetary returns. In the experiments here reported, returns derived from the trees which received "Thin Wood" pruning exceeded those from conventionally pruned trees by 21 per cent.

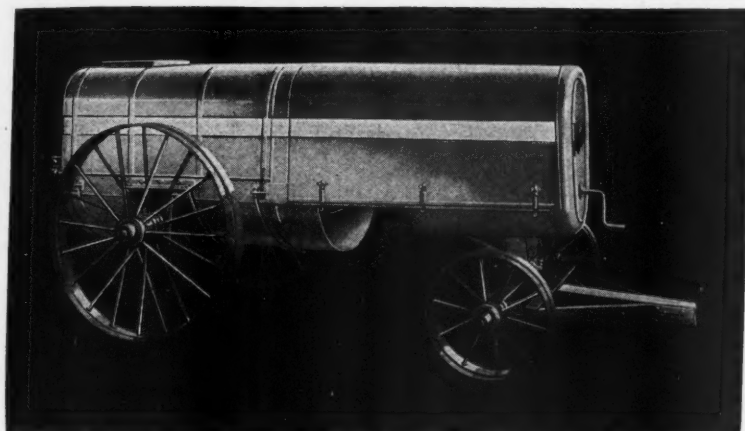
While "Thin Wood" pruning eliminates most of the under-sized apples from the lower and inner part of the tree, it is often desirable to increase the size of that fruit produced by the outside and top. This improvement usually can be best accomplished by thinning, and a brief discussion of this important operation will not be out of place at this time.

Thinning as now commonly practiced is not entirely satisfactory. This is largely because of the fact that the fruit is usually spaced at a given distance without regard to the variations

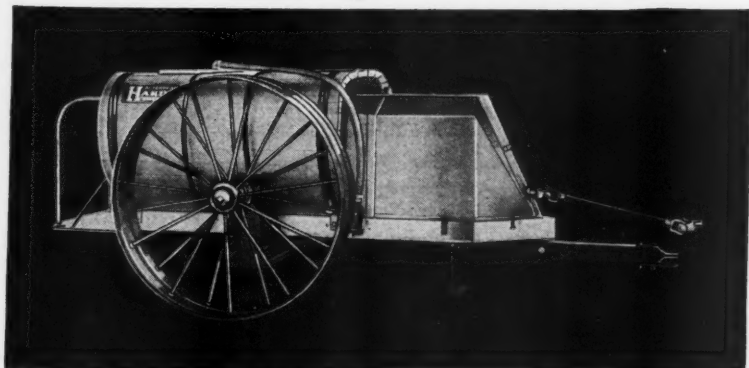
(Continued on page 27)



- Really Streamlined ● Fully Armored and Dust Proofed ● Roller Bearings on All Wheels ● Interchangeable Wood or Steel Tanks ● All Moving Parts, Including Plungers, Running in a Bath of Filtered Oil ● Short-turn Trucks ● Rubber or Steel Wheels



Steel and wood tanks are the same size and interchangeable on all Hardie streamlined sprayers. They are easily dismantled. The cut-under truck runs on roller bearings.



Every part of Hardie Tractor Trailer Sprayers is made of the best and toughest material obtainable. The Hardie easily meets the severe shocks to which this type of sprayer is subjected.

MANY growers are just realizing that the real value of a sprayer is its practical utility in the never ending fight for pest control in orchard, grove and field.

For these reasons every detail of Hardie sprayers is designed to contribute directly and valuably to the practical advantage of the grower.

Every new thing put into a Hardie is orchard tested.

Hardie sprayers are streamlined not merely for appearance but to avoid damage to trees and fruit and to eliminate the time lost dislodging branches that become caught on sprayers which have projecting angles and parts.

The roller bearings on Hardie trucks reduce the pull 50%.

The dust-proof armor sheltering pump and engine actually protects those parts—there is no radiator to suck in dirt and damaging spray material.

The platform for hose men on the larger Hardies speeds and facilitates handling the guns.

The short-turn truck saves time on turns.

Hardie pump lubrication—every part including plungers running in a bath of filtered oil—not only cuts operating cost but protects and lengthens the life of the pump.

Every one of the numerous exclusive Hardie features contributes directly to convenience and practical utility.

See the Hardies before you buy. Write for catalog showing 40 sizes and styles of portable and stationary Hardies powered by truck, tractor, gasoline engine and electric motor delivering 3 to 50 gallons per minute at 300 to 800 pounds pressure per square inch for every spraying job.

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AT A FAST PACE**

Down Narrow Grape Avenue!

● The compact Case "CV" Vineyard Tractor works in narrow quarters with utmost care and speed. One user says, "We have only 6-feet to work in, so we have had to have small tractors . . . we find we can cover much more ground with our Case than both our former tractors together, and easily make the turns with load in a narrow avenue." Light in weight — preventing soil packing — the compact Case nevertheless has the power and traction to pull big loads "in high" — and do it with engine throttled down, saving fuel and shifting of gears. Learn more about this modern tractor and orchard tools. Send coupon for informative folders — today.

MAIL COUPON TODAY

J. I. CASE CO., Dept. C-12, Racine, Wis.

Please send me the book showing Case outfits in all kinds of orchard work, and giving details of Casetractors and orchard tools.

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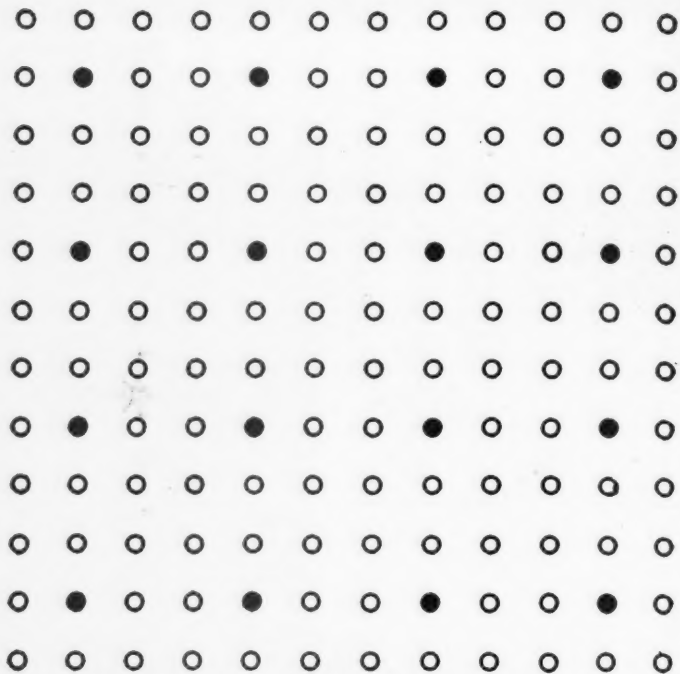
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BEES

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Beekeeping is a delightful, profitable sideline or a full time business. Read what these men and women from all walks of life have made from the bees. We supply everything at very little expense and tell you just how to start. Send for this free book, "Does Beekeeping Pay?" also a free copy of Gleanings in Bee Culture, 2 yrs. \$1.50.

The A.I. Root Co. Bx. F36, Medina, O.



Suggested planting or topworking plan where the minimum of trees of the pollinizing variety or varieties is desired. This plan assumes annual flowering of the pollinizing trees represented by the solid circle. All trees are permanent.

NEW UNDERSTANDING OF FRUIT SETTING

(Continued from page 9)

number of self-pollination experiments with the apple and pear is that fruits insufficient to produce a full commercial crop are developed from selfed flowers. Probably the only important commercial apple variety concerning which there is any divergence of opinion is the variety Baldwin. As a result of the work in New York state, it is believed that the variety can be planted in solid blocks without provision for cross-pollination by other varieties. In the Ohio experiments under this treatment, the variety has been found to give the equivalent of half a commercial crop under favorable conditions, but this seems hardly sufficient to recommend its planting in solid blocks. The development of a considerable number of seeds is usually required in a flower if it is to mature into a fruit, but Baldwin is an exception in that it is able to set fruit under favorable food and water conditions with a small number and, in some cases, no well-developed seeds.

Possibly all fruit growers are now aware that the above conclusion concerning the self-unfruitfulness of apple varieties is supported by a unanimity of evidence presented by investigators both in the United States and abroad. In the early years, small, plain, manila paper bags were placed over flower clusters to prevent cross-pollination by insects, and were left until all dropping had ceased. Later, translucent bags to admit light were

used and the bags removed long enough to self-pollinate the flowers by hand, thus insuring that the pollen was transferred from the anthers to the female part of the flower (the stigma).

An occasional investigator has built cheesecloth-covered frames around individual trees in order to approximate orchard conditions as far as possible. Thus the insects were excluded except for the colony of honeybees placed inside during the blooming period of the tree. Since this method proved needlessly expensive and under ordinary circumstances no more representative of orchard conditions than others, it has not been so extensively used as the cheesecloth bag method. In this latter method, now rather commonly used to determine whether a new variety is self-fruitful or not, a cheesecloth bag three by six feet is placed over a limb one to two inches in diameter just before the flowers open. It is removed at full bloom only long enough to pollinate the flowers.

Since early in the course of the self-pollination investigations it became evident that pollen of another variety would be necessary to produce fruits, cross-pollination tests of each variety were carried on in conjunction with the self-pollination tests. One variety acting as the pollinizer of another was shown to produce fruit, while other varieties proved to be ineffective.

(Continued on page 30)

Nationwide News

Prices for New Jersey peaches on the New York market during the past season showed that the Golden Jubilee variety brought a substantially greater return than Carman. The Golden Jubilee is a second generation seedling of a cross of Elberta by Greensboro. It first matured fruit at the New Jersey Experiment Station in 1925 and is now extensively planted throughout the state.

▲ ▲ ▲
R. Ranney Scott, a young Future Farmer of America, received honors for his fruit displayed last fall at the Fennville (Mich.) Fruit Show. This exhibition of interest in production of quality fruit mirrors the endeavor and the experiences of young fruit farm folks in all parts of the country and is of extreme importance as these young men will be the fruit producers of tomorrow.

▲ ▲ ▲
According to the recent trade agreement drawn up between Canada and the United States, the Canadian duty on oranges is lifted from January to April, inclusive. By the same agreement, Canada maintains lemons on the free list, and the duty on grapefruit is reduced from one cent to one-half cent per pound.

TEST YOURSELF

1. What state produces the most peaches?
2. Is Stayman Winesap or Jonathan the best pollinizer?
3. What is the difference between pollination and fertilization?
4. Which contains the most fruit, a western apple box or bushel basket?
5. What is the parentage of the Cortland apple?
6. When and where did the McIntosh variety originate?

(Answers on page 36)

In a well-isolated, five-acre apple orchard near Parma, Idaho, entomologists of the University of Idaho Agricultural Experiment Station and the U. S. Bureau of Entomology and Plant Quarantine are endeavoring to find out how good a job parasites of apple insects can do as a substitute for sprays. Parasites of the codling moth, San Jose scale and woolly aphid, the three major insects with which the apple grower has to contend, will be given every encouragement and will not be handicapped by sprays or other control practices. So far as is known, this is the first time that an attempt has been made to test out parasitic control of apple insects in an entire orchard.

MARCH, 1936

THE FARMER'S IDEA OF A GOOD TRUCK IS FORD'S IDEA, TOO



HENRY FORD pioneered the idea of low-cost truck transportation. His idea was to make a truck so low in price and so economical to run that every farmer could afford to own it. Henry Ford knows that a good farm truck must be reliable, economical, and a good performer. • These ideas of Ford's are ideas that **EVERY FARMER** agrees with. • Ford V-8 Trucks have been **PROVED BY THE PAST** on the toughest farm hauling jobs. For 1936, Ford V-8 Trucks have been **IMPROVED FOR THE FUTURE**. Every part is made to match the high quality of the V-8 engine. Your Ford dealer invites you to try one . . . on your own farm. Get in touch with him today and set a date for an "on-the-job" test.

THE ONLY TRUCK AT ANY PRICE THAT GIVES YOU ALL THESE FEATURES

80-horsepower V-8 truck engine . . . full-floating rear axle with straddle-mounted pinion . . . full torque-tube and radius-rod drive . . . quick-action safety brakes . . . big, 11-inch heavy-duty clutch . . . truck-type four-speed transmission . . . deep, rugged frame with full-channel-depth cross-members . . . durable baked-enamel finish. You need all these features in a modern farm truck.

• Any new 112-inch wheelbase Ford V-8 Commercial Car can be purchased for \$25 a month, with usual low down-payment. Any new 131 1/2-inch or 157-inch Ford V-8 Truck can be purchased with the usual low down-payment on the new U. C. C. 1 1/2% per month finance plans.

FORD V-8 TRUCKS AND COMMERCIAL CARS

STATE NEWS

(Continued from page 19)

braska Horticultural Society held in Lincoln recently. Marketing was the featured subject at this meeting, as well as grower discussions.

The new officers for 1936 are Frank Sims, Nebraska City, president; first vice-president, Dearle Baker, Shubert; second vice-president, H. H. Reben, Nebraska City; treasurer, Loy Franklin, Falls City.—E. H. HOPPERT, Sec'y, Lincoln.

NORTH DAKOTA—We have been interested to note this past fall the great variation in the shape and other characteristics of some of our common apple varieties as grown in different locations. One of the newer promising hardy sorts, Haralson, as grown in northern Minnesota, is a rather long apple, conical in shape, of medium size and a rather dull red towards the blossom end. In southern Minnesota the same variety is very much larger and brighter colored, but still retains the long cone shape. When grown under prairie conditions in North and South Dakota the variety assumes a much flatter shape and might almost be called a flat apple. The color in South Dakota is rather bright, but in North Dakota it tends to be dull.

Jonathan apples from the Pacific Coast are much inclined towards striping and rather soft flesh. From Minnesota the size is somewhat smaller but the color is better, inclining more towards the solid red. For perfection, the Jonathan as raised in Missouri and Kansas we believe tops the list because it grows larger and brighter colored than from any other place we have seen.—A. F. YEAGER, Sec'y, State Horticultural Society, Fargo.

SOUTH DAKOTA—The Robertson black raspberry originated as a chance seedling. It was found growing under an apple tree in the

INTERESTED VISITOR



Dean John F. Cunningham of the College of Agriculture of Ohio State University attends the meeting of the Ohio State Horticultural Society which was held at the University.

orchard of John S. Robertson, nine miles northwest of Hot Springs, S. D., in 1928. Mr. Robertson does not allow anything to grow under his apple trees to conserve moisture. He practices absolutely clean cultivation, but this seedling, because of its great vigor, attracted his attention and he moved it to a place where it could be watched. In a few

years it produced a good crop of large, high-quality berries, and he has propagated it as fast as possible, now having a large bearing field of them. It has proved hardy and productive in all sections of the state where it has been tried, and the State Horticultural Society is offering it as one of their plant premiums this year.—W. A. SIMMONS, Sec'y, State Horticultural Society, Sioux Falls.

UTAH—Dr. Arvil L. Stark, secretary of the State Horticultural Society during 1935, has left Utah State Agricultural College, where he successfully handled the teaching and research work in pomology and ornamental horticulture during Prof. F. M. Coe's sabbatical leave of absence, to take up similar work with the New Mexico State College at Las Cruces. Dr. Stark's excellent work at the college and as secretary of the society won him a host of friends in Utah.

Prof. F. M. Coe has returned to the U. S. A. C. after a year of graduate work at Cornell University, Ithaca, N. Y., and the New York Experiment Station at Geneva, and is acting as secretary of the society until the annual convention because of Dr. Stark's leaving the state. At Cornell, where he was a DeWitt Clinton Smith Fellow in Agriculture, and at Geneva, Coe made a special study of horticultural genetics and cytology and methods of fruit breeding, carrying out an extensive program of breeding and embryo abortion studies with sweet cherry crosses at the Geneva station under the direction of Dr. U. P. Hedrick, Prof. Richard Wellington and Dr. B. R. Nebel. On his return he and his family visited experiment stations in New Jersey, Maryland, Ohio, Michigan, Wisconsin, Minnesota, and South Dakota, investigating fruit breeding methods and other research.

Assistant County Agricultural Agent Anson B. Call of Utah County, who had charge of extension work in horticulture in that important fruit county, has been transferred to Washington County, with headquarters at St. George. Call is a graduate of the Brigham Young University at Provo, and was selected to succeed the late Walter F. Smith of Washington County.

MONTANA—The 39th annual meeting of the Montana State Horticultural Society was held at Polson and was the best attended and most successful meeting of the past few years. A very keen interest developed regarding horticultural matters.

R. G. Ostergren of Darby was elected president. The date of the next meeting was set for December 4-5, 1936, at Hamilton.—G. L. KNIGHT, Sec'y, Missoula.

WISCONSIN—There is a growing sentiment among Wisconsin fruit growers in favor of broadcasting nitrogen fertilizers between the trees instead of under the branches of each tree, especially in the older orchards.

We all know that the roots of the larger trees extend beyond the tips of the branches and may completely fill the space between the rows so that the fertilizer will be available wherever it may be applied in the orchard, excepting close to the trees.

Whether or not the tree will absorb more of the fertilizer if it is broadcast thinly over the entire root area, or applied in more concentrated form over a smaller area, has not been definitely proved. However, we do know that we must grow a cover crop for mulch. Whether we practice clean cultivation for a part of the season or have a permanent sod mulch, the time will come when fertilizers are necessary for good growth of the cover crop. I have seen quack grass only six inches high in an unfertilized orchard on sandy soil. A heavy mulch between the rows will no doubt help to conserve moisture because of the shade provided and because it protects the soil from drying winds.

I believe the question of the humus supply is the serious one we face in our orchards. Lack of humus may mean erosion in hilly orchards and drying out of our lighter soils, resulting in poor tree growth and an unprofitable business.—H. J. RAHMLow, Sec'y, State Horticultural Society, Madison.



ORCHARD Work on Time All Year With CLETRAC

When it comes time for dormant spraying, if you own a Model E Cletrac crawler tractor, you spray. Spring thaws that leave the ground soft do not prevent your spraying at the proper time. Cletrac Model E, now available in five widths—31, 38, 62, 68 and 76 inches between track centers, is adaptable to all types of orchard, vineyard, row crop and vegetable farming. It has 24.6 drawbar and 29 belt h.p.—power both to haul a large capacity spray tank and to operate

the spray pump from the power take off. Broad tracks, extra width and controlled differential steering give control and stability on hillside operations without leaving ruts to start gullies. You pay no premium for these advantages found only in Cletrac.

Investigate the many money making features of the new Model E Cletrac, the lowest priced, most usable crawler tractor you can buy today. Ask for new broadside.

THE CLEVELAND TRACTOR CO.
CLEVELAND, OHIO



"THIN WOOD" PRUNING

(Continued from page 22)

in the productive capacities of different branches. When this method is used many of the fruits in the inner part of the tree fail to make size even though they are well spaced. Not only this, but the same spacing in vigorous, productive areas often means that fewer apples are left in the top than it is capable of growing to large size. This means reduced yield and diminished returns.

Reduced to its simplest terms, "Branch" thinning consists in spacing fruit according to the productive capacity of the branch upon which it is borne. This differs materially from the currently practiced method in which the fruit is spaced at an arbitrary distance without regard to the type of wood upon which it is produced. In "Branch" thinning all of the fruit is removed from thin, weak wood, as experience has shown that a branch of this type is not capable of producing even one apple of large size and good color. On wood of intermediate type, the spacing is somewhat wider than that now commonly employed. It has been found that wood of this character is capable of maturing only a relatively small number of fruits of large size. The spacing on thick, productive wood is relatively small, as it has been found that these branches are capable of producing a comparatively large number of fruits of large size.

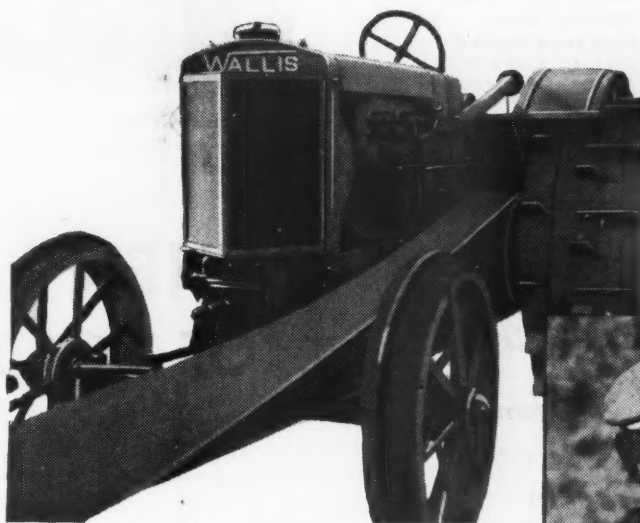
As the spacing to be used depends upon such factors as the character of the soil, and the variety, age and vigor of the tree, no attempt will be made in this article to suggest exact spacings. Once the fundamental principles have been grasped, the individual grower, with his knowledge of past performance, will be able to determine the spacing which should be used on the different types of wood occurring in his trees.

"Branch" thinning not only eliminates many inferior specimens from the resulting crop of fruit, but it allows the more productive parts of the tree to carry the maximum load of high grade apples. This means increased returns. Trials have shown that "Branch" thinning often increases total returns by as much as 20 per cent. The method is especially easy and effective when used in conjunction with "Thin Wood" pruning. The writer confidently believes that the adoption of this method will materially increase the profits of the grower who employs it.

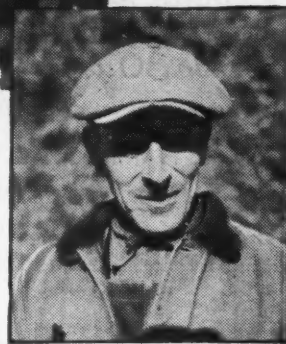
An all-day fruit school was held at Winchester, Va., on January 31. Appearing on the program were Phil H. Gold, William Beverley, L. O. Dick, Peyton Marshall, H. B. Groves and W. S. Hough of the Winchester Research Laboratory; A. H. Teske, extension horticulturist and I. Fred Stine, county agent.

MARCH, 1936

7½ YEARS without an overhaul



CARL J. CORDES, of Napoleon, Ohio, one of the hundreds of thousands of American farmers who have learned that pennies spent for good gasoline save dollars in repair bills. Of his own experience, Mr. Cordes says: "I don't think any tractor would give this excellent service unless it burned gasoline entirely."



Good gasoline keeps engines in good shape

MR. CORDES uses good gasoline because, as he says, "It saves me money to get the better running that good gasoline gives."

His letter continues:

"Most farmers have to have their tractors overhauled every few years and I think the reason for this is the low-grade fuels they burn. In eight seasons of service (covering 7½ years), I've never had the pan off my Wallis tractor. Last year I took out the transmission and motor and found it needed NO repairs other than to have one pulley bearing tightened."

Regular gasolines sold by leading oil companies throughout the country are much better today than they were sev-

eral years ago. They give you greater value for every penny you spend for gasoline.

Remember also that the higher the "octane rating," or anti-knock quality, of a gasoline, the better the performance it will give in modern high compression car and truck engines. The regular grades of gasoline sold by many leading oil companies today have an octane rating of approximately 70. Most of these 70 octane gasolines contain lead tetraethyl to give them their high anti-knock quality.

Ethyl Gasoline Corporation, Chrysler Building, New York City, manufacturers of anti-knock fluids for regular and premium gasolines.

It pays to buy GOOD GASOLINE FOR CARS, TRUCKS AND TRACTORS

The Wealthy is the best variety for northeastern Minnesota, in the opinion of D. E. Anderson, grower near Moose Lake. He says that the Hibernial and Duchess make good cooking apples and that the Haralson promises to be a good variety in that territory.

The recent cold spell was of benefit, say growers near Anna, Ill., in that it killed off many insect pests; also scale on trees will not be so hard to control.

AMERICAN FRUIT GROWER

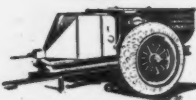
According to a recent ruling by the Interstate Commerce Commission, western fruit shippers will no longer be allowed to send caretakers along with carlot shipments of produce moving under the carriers' protective service.

Dr. J. K. Shaw of Massachusetts State College, recently spoke before growers at Worcester, Mass., on forecasting production from leaf and twig characteristics.

PAGE 27

OSPRAIMO Sprayers

Give You
at Lowest Cost
What You Want Most—
Dependable Pressure
Uniformly
Maintained



IF you raise Potatoes or Truck Crops or have an Orchard, it will pay you to send for our Catalog. It describes a complete line of Traction and Power Sprayers, including tractor and truck-operated models. If interested write for Free Catalog today.

Field Force Pump Co.
Dept. A, Elmira, N.Y.
Makers of Sprayers for
More Than 54 Years

Uniform High Pressure Guaranteed

*Making good spray guns
is a highly specialized job.
We have been studying it for
more than 30 years!*
Will Hamilton

W. L. HAMILTON & CO.

BANGOR, MICHIGAN

Six Models. Better guns for less money.

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KITSELMAN FENCE

Guaranteed highest quality at lowest prices. Copper-Blend Steel, 99 92/100% pure zinc galvanized. **Horse-high, Bull-strong, Pig-tight Farm Fence;** Poultry and Lawn Fence, Steel Posts, Gates, Barb Wire, Faints, Roofing. **WE PAY FREIGHT.**

KITSELMAN BROTHERS
Box 206 Muncie, Indiana.

NO. 145 ANGLE SPRAY ROD

for Better Fruit Coverage. It reaches where spray gun cannot. Tenth successful year in ten thousand Orchards—from Maine to California. Repair parts or trade-in allowance for older models.

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Thorough spraying, as is being done above by Peter Grenewetzke and E. D. Row on a fruit farm near Hartford, Mich., is necessary for the control of apple scab.

"WHEN" AND "WHY" OF SCAB CONTROL

EACH season the knowledge of control of various fruit pests is augmented by continued research and observation. In order to understand the "why" of control measures as well as "when," the following discussion is offered.

Apple scab fungus overwinters in leaves on the ground. When the development of the fungus reaches the highest point on the old leaves in the spring, and moisture is present in the form of rainfall, ascospores, or the tiny reproductive bodies of the fungus, are released into the air and may settle on leaves if the buds have opened. This release of the ascospores may be as early as late February in some sections, but few are released earlier than the opening of the buds.

The spray schedule of the Illinois Agricultural Experiment Station recommends that the pre-bloom spray be applied at the cluster-bud stage, just before the buds open. After the buds open the growth of the leaves is rapid, with the subsequent growth of new tissue. If rains were present just before the exposure, the pre-bloom sprays would prove ineffective.

A good pre-bloom spray application actually amounts to two covers. The trees are open at this time and when the spraying is done from one side it usually permeates the opposite side, and then another cover is applied when coming down the opposite row on the other side of the tree. The number of pre-bloom sprays varies according to the weather and the discretion of the growers. It is extremely important that the pre-bloom sprays are not omitted for best control results.

According to Dr. H. W. Anderson of the Department of Horticulture at the University of Illinois, growers should observe available weather re-

ports and maps and spray according to the release of spores. If the leaves are dry on the ground and there is not much tree growth exposed, there is no need to spray, says Dr. Anderson. A fine mist of the fungicide is sufficient for the control of the scab.

Contrary to popular opinion in some sections, cool days are no hindrance to the development of the scab spores. This is, of course, up to a certain point, but in some cases growers have neglected to spray because they thought it too cold for the development of the fungus. They found, however, much to their discomfort, that it takes a low temperature to make the trees safe against the flying spores. During rainy weather there should be not more than a four-day interval between sprays.

Spraying in full bloom is also governed by existing conditions. Cool, rainy weather during the blooming period makes it important that the expanding flower parts and leaves be covered. If the fruit stems become infected at this time, dropping of the fruit will occur later on.

The calyx spray comes about when three-fourths of the petals are off and is controlled so that the fungicide, and the lead, get into the calyx.

Approximately a week after petal-fall, there is rapid development of the terminal growth, or leaf bud expansion, making it important to cover this new growth.

The first crop of spores from the fungus has a maximum discharge range, which usually extends from the time of full bloom to about a week after. As stated above, the spores may be released earlier than this and may also be released later, but the greatest number burst their confines during the period mentioned immediately above.

After the spores become located on

the plant tissue, they grow and conidia, or tiny stem-like structures, are produced in masses on the leaves. These conidia produce spores, but unlike the spores released earlier in the season, this later type must be carried by running water or mist only; they will not be carried by the wind. It is important to cover the exposed tissue, both foliage and fruit, about a week after petal fall. Approximately 17 days after petal fall, another spray is necessary. Spraying should be done for scab as the conditions demand. In some cases, growers have delayed spraying when the codling moth egg hatch was delayed by cool weather. When this is done scab development continues unhampered.

On the cover of the Michigan Agricultural Experiment Station spray calendar is a quotation which reads, "Stop apple scab in the pre-blossom period and codling moth in the first brood."

In this short sentence is contained sound advice which no grower can afford to disregard. Efforts to control these important pests at the outset of their presence will be amply rewarded when clean fruit is harvested at the end of the season. This, of course, means that subsequent sprays are applied at the correct time and are of the correct make-up.

While speaking at the Michigan Horticultural Society meeting, W. C. Dutton of the Michigan station said that liquid lime-sulphur and dry lime-sulphur gave good results in apple scab control at lesser concentrations with less russetting than when the higher concentrations are used. This fact is of importance, since russetting has constantly been a factor in the appearance of cull apples. If lesser concentrations of these important and effective fungicides will bring about the same control results as do the higher concentrations, the russet factor alone would be sufficient reason to use the lower concentrations. The use of lower concentrations will permit better coverage at the same cost.

Electric sulphurs and flotation sulphurs gave similar results as those stated for the lime-sulphurs.

Liquid lime-sulphur is the most economical and effective of the scab fungicides and should be applied when the spray will dry within an hour after it is applied. Dry lime-sulphur will usually give less injury than the liquid.

When used at the proper concentrations the flotation sulphurs are as effective as are the lime-sulphurs. The paste flotation sulphur should be used at twice the rate of the dry product. The wettable ground sulphurs have not given as good control as have the flotation sulphurs.

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NEW UNDERSTANDING OF FRUIT SETTING

(Continued from page 24)

Thus it was evident that apple varieties fell into two distinct groups, but until 1926 the reason for this differentiation was inexplicable. One group produces fruit abundantly when used as cross-pollinizers (exceptions due to close relationship are given later), while varieties in the other group fail completely as pollinizers of any variety whatsoever.

Group 1

Varieties effective as cross-pollinizers (having viable pollen):

Ben Davis, Gano
Cortland
Delicious, Starking, Richared
Golden Delicious
Grimes Golden
Jonathan
McIntosh
Maiden Blush
Melba
Northwestern Greening
Oldenburg, Red Duchess
Rome Beauty, Gallia Beauty, Red Rome
Sutton
Wagener
Winter Banana
Yellow Newtown
Yellow Transparent
York Imperial, Red York

Pear

Bartlett (not on Seckel or Louise)
Beurré d'Anjou Gorham
Beurré Bosc Kieffer
Beurré Clairgeau Lawrence
Clapp Favorite Sheldon
Duchess d'Angouleme Tyson
Flemish Beauty Winter Nelis

Group II

Varieties ineffective as pollinizers (inviable pollen):

Arkansas (Mammoth Black Twig)
Baldwin
Gravenstein, Banks, Red Gravenstein
Minkler
Nero
Ohio Nonpareil
Rhode Island Greening
Stark
Stayman Winesap, Stamared, Blax-tayman
Summer Rambo
Tompkins King
Turley
Winesap

Pear

No varieties of commercial importance, although this list includes such varieties as Beurré Diel and Pitmas-ton Duchess.

After a considerable number of field tests, it was observed in the laboratory that pollen of the varieties which failed to produce fruit was also

incapable of producing the normal pollen tubes which grow down through the style and bring about fertilization of the egg cell, thereby initiating seed development. Pollen of different varieties, taken from the orchard and transferred to a synthetic agar and sugar medium or cane-sugar-in-water solution in the laboratory showed definitely whether a sample of pollen was viable. Failure of the sample to germinate satisfactorily under favorable conditions in the laboratory meant failure of that sample of pollen to produce fruit when applied in the orchard. Often a sample from a variety known to be effective fails to germinate in the laboratory, and fails also in the orchard.

Thus we are to understand that varieties in the effective pollinizing group do not all show the same percentage of germination, but all show a germination of more than 60 or 70 per cent with normal pollen tubes. This percentage of germination is to be contrasted with that of varieties incapable of producing fruit. The latter show a small percentage of germination, but the tubes are short, thick, and soon burst like inflated rectangular toy balloons.

As the direct effect of this information, the interplanting of varieties in order to effect cross-pollination was seen to be necessary. As the older orchards with numerous varieties were superseded by plantings incorporating fewer varieties, the importance of proper combinations soon became recognized. It became evident, for instance, that a planting of Jonathan and Stayman Winesap produced fruit only on Stayman Winesap, and that Jonathan was unfruitful due to Stayman Winesap's inviable pollen. Consequently it became evident that a third variety with viable pollen was required in those combinations made up of two varieties, one of which had non-germinable pollen. Delicious, for example, would serve as the source of pollen for Jonathan in the above combination. On the other hand, two varieties such as Rome Beauty and York Imperial proved to be a successful combination, since the pollen of both is viable and the blooming season of one overlaps that of the other.

Now the importance of cross-pollination had immediately emphasized the necessity of pollinizing agents. Entomologists noted that a number of insects acted as pollen-carrying agents for tree fruits, honeybees, bumble bees and other wild bees being by far the most important. This fact has obviously given great importance to honeybees in the pollina-

(Continued on page 32)

Plum and Peach Virus Diseases

THREE of the important virus diseases of peaches are yellows, little peach and red suture. These diseases have become increasingly important to the commercial peach producer in certain sections, and the work of men in Michigan has thrown new light on these troublesome diseases.

Donald Cation of the Department of Plant Pathology of Michigan State College has made some interesting observations and experiments on this problem and the following is a résumé of his talk before the Michigan State Horticultural Society.

Peach growing started in this country in 1630. For more than 150 years after this date there was no record of the above-mentioned diseases.

In 1793, yellows appeared near Philadelphia, and within a few years this scourge of the susceptible peach spread over the northern section of the country as far as the Mississippi River.

The year 1931 saw an epidemic of red suture which ravaged many peach orchards. Although it has not been heralded so widely, little peach may become more troublesome than yellows if the infestation is severe.

Although far from satisfactory, the control for these diseases until recently has been to remove the dis-



Although appearing to be normal, a plum tree like the one above may harbor peach virus diseases, which are spread to nearby peach orchards by the plum leaf hopper.

ected trees. Workers who had studied this problem in all sections of the nation were sure that the yellows was spread by an insect, but they were unable to discover the responsible insect. Many kinds of insects were used in an endeavor to spread the disease but all attempts were unsuccessful.

Then about three years ago research workers in the East found that peach yellows was spread by the plum leaf hopper. It has been definitely

MARCH, 1936

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shown that this same insect spreads little peach, and it may be able to carry red suture.

The plum leaf hopper is about the size of a housefly. It feeds on the leaves and the smaller branches. It has a queer habit that is perplexing to the observer. When the infested tree is approached, the hoppers run to the opposite side of the tree, and the untrained observer might walk through a badly infested orchard without seeing a single leaf hopper. As high as 10,000 of these insects have been found on one tree.

Of extreme importance, then, is the control of the plum leaf hopper.

This can be accomplished by spraying cultivated plums with one cover of nicotine sulphate applied between June 1 and June 7. The insect has just one brood and should be killed by the above spray, as they are not able to fly from June 1 to 7. A supplementary control is the destruction of roadside plum trees and plum thickets.

Another virus disease—peach mosaic—has no relation to the plum. More than 50,000 peach trees have been removed in Colorado during the past two years due to this disease. Peach mosaic shows mottling and crinkling of the leaves.

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NEW UNDERSTANDING OF FRUIT SETTING

(Continued from page 30)

tion of tree fruits, where wild pollinizing agents are not sufficiently available. And since cold, rainy weather obviously means fewer and shorter flights to and from the hives, it became necessary to make provisions for abundant cross-pollination if such weather occurs during the blooming season. Thus it becomes evident that honeybees must be introduced into the planting and the colonies so distributed as to make cross-pollination abundant even in the most unfavorable weather. Hence there had arisen the usual recommendation that apple varieties should be so interplanted that no tree stands more than two to four rows distant from the variety which serves as a source of pollen. One strong colony of bees to the acre of a mature planting is the usual recommendation.

Extremely important as the pollination investigations were in 1926, there were still certain gaps in the fruit-setting picture. Known facts did not account sufficiently for the behavior of varieties. Questions such as the following arose:

Why does pollen of the varieties listed above as ineffective pollinizers fail to germinate? Must one carry out pollination tests of all possible varietal combinations in order to distinguish the fruitful from the non-fruitful? What is the explanation of differences in fruit-setting behavior of some of the important varieties in the orchard? The variety Arkansas showed an exceedingly heavy drop of flowers immediately after petal fall despite good cross-pollination. What is the reason? Stayman Winesap, too, has a heavy drop but not as extreme as Arkansas, while Grimes Golden under comparable conditions sets fruit in "ropes." How is this difference in varieties to be explained?

In consequence of these observations and consequent pollination tests, the writer advanced the conclusion in 1926 that some other fruit-setting factor than those already known must be responsible for this difference between varieties, and it was suggested that in certain varieties the female sex cells must be incapable of developing good seeds. This, it was believed, would account for the difference in behavior of varieties in the cases already mentioned.

It was at this point that the results of a laboratory investigation by a Russian named Rybin were published, and very shortly were seen to be of great practical value. Until 10 years ago it was unknowingly assumed that flowers of all apple (and pear) varieties possessed the same number of bodies bearing the factors responsible

for the particular hereditary nature of a variety (chromosomes). Rybin discovered a variety, Canada Reinette, which possessed 17 more chromosomes than were ordinarily supposed to exist in apple varieties. This discovery would have been of no immediate practical importance had the viability of the sex cells remained unaffected by such an increase over the basic number. But such an increase in chromosomes rendered nearly all the male sex cells non-germinable and consequently the pollen became of no value. And the variety so marked fell into the list of varieties incapable of use as a pollinizer.

Thus since 1926 one new and important trend in fruit-setting investigations consists of the determination of the number of chromosomes in both new and old varieties of apple, rather than an extended series of heterogeneous pollination tests in the orchard. And what are the results? With the exception of Winesap, the varieties given in the list characterized as poor pollinizers (Group II) are found to contain the extra set of chromosomes and are called "triploid" varieties. Those having effective pollen have been found in every instance to contain the smaller number of chromosomes, namely 34, and are called "diploid" varieties. The bud sports of the different varieties have been found to be similar to the varieties from which they originated. Blaxtayan and Stamared, for example, are, like Stayman Winesap, of no value as pollinizers, while Starking, like Delicious, is completely effective.

But the most important application of the discovery that apple varieties vary in the number of chromosomes is that the female sex cells which are directly concerned in seed development are also unfavorably disturbed by the additional chromosomes. Although the effect is not so extreme as with the pollen, some are rendered sterile, others fail to reach their full development, and still others are so constituted that they never produce strong, well-developed seeds. Obviously, this results, as has been determined by examination of young and mature fruits, in a definite tendency toward lowered seed content in contrast to the number of seeds present in the fruits of the diploid varieties.

At this juncture it is necessary to recall the significant fact that if flowering spurs and shoots have sufficient food and water supply, fruits can develop with fewer seeds than if these materials are deficient. It is at

(Continued on page 37)

NOTES AND NEWS FROM THE FIELD

Ten farmers, J. C. Fox, E. M. Cooper, Frank Hodges, E. A. Showers, Elizabeth Moody, Dick Cheatham, R. H. Simmons, C. H. Watkins and I. McEran, in the vicinity of Mount Houston, Texas, are planning to plant 28 acres of the Meier everbearing grape, which was originated by L. G. Meier of Mount Pleasant, Texas.

A fruit tree census was started in Asotin County (Idaho) during February to determine the number of bearing trees in the county. County Agricultural Inspector John Keene of Clarkston is in charge of the work.

Perry Lowe of Pores Knob, N. C., was recently elected president of the Brushy Mountain Fruit Growers at their annual meeting in Wilkesboro. Robert L. Morehouse was elected vice-president and Mrs. C. F. Bretholl, secretary.

Airplanes used for dusting cranberry bogs last year in New Jersey gave excellent results against leaf hoppers and false yellow-headed fireworms, says Charles S. Beckwith of the New Jersey station.

Mrs. Emma Richards of McAllen, Texas, has started a contest for the largest grapefruit grown in the Lower Rio Grande Valley by displaying a huge green Marsh seedless, 19 inches in circumference, and a ripe Marsh seedless 24 inches in circumference.

The South Carolina Peach Growers Association has established its own offices and marketing facilities in Spartanburg, S. C., with T. H. Cribb of Florence as manager.

G. A. Marsh, St. Louis, Mo., was re-elected president of the Western Fruit Jobbers' Association of America at the final session of the thirty-second annual convention of the group held recently in Kansas City. With him were re-elected all other officers and members of the advisory board of the group. They are:

C. R. Godding, Chicago, treasurer; Kirk F. Mitchell, Detroit, sergeant at arms; William L. Wagner, Chicago, secretary and business manager; J. F. Waddell, Chicago, traffic manager. Members of the advisory board, W. E. Anderson, Topeka; George F. Burt, Lincoln, Nebr.; S. M. Cohodas, Ishpeming, Mich.; R. H. Dietz, Chicago; Joseph Marguleas, San Francisco; Mr. Marsh, and Ed. Stedman, Jr., Beaumont, Texas.

As part of their Achievement Day ceremonies for 4-H Club youths, the Chamber of Commerce of Austin, Texas, distributed more than 400 fruit trees to the boys and girls in attendance. This is an annual custom and encourages the planting of orchards in the section.

OHIO ORCHARDIST HONORED

One of four Master Farmers selected for Ohio for 1935 was Harry W. Lutz, fruit grower of near Carroll. He received the award during the annual Farmers' Week held at Ohio State University.

Mr. Lutz farms 102 acres of apples, 20 acres of peaches, some plum and cherry trees and an acre of grapes. Last year he produced about 8000 bushels of apples and 5000 bushels of peaches. During the past season he built a 5000-bushel storage on his farm with a large packing and sales room. All of his fruit is sold by grade, and undersized fruit is made into cider.

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PAGE 33

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NEW ORLEANS



Exhibit at Detroit of the Michigan State College. The comb honey on the left speaks for itself. The wording in the chart in the corner reads, "Busy Bees Bring Bending Branches to the Commercial Orchardist." The relative sizes to the two diagrams of apple show how the bees increase the size of the crop.

BEES FOR BETTER FRUIT CROPS

(Continued from page 13)

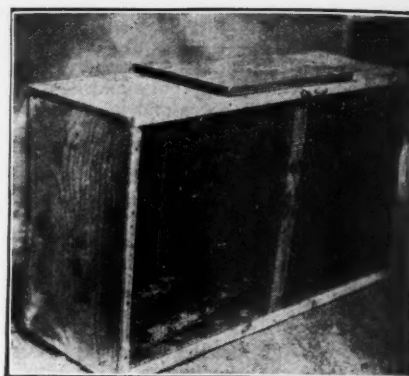
It will be more satisfactory and the cheaper in the end to rent strong colonies. When bees cannot be rented, recourse should be had to what is known as package bees purchased from the South from bee men who make a business of producing and shipping such bees. It should be explained that package bees are shipped without combs in wire cages, from two to five pounds of bees in each cage.

To get the best results, there should be at least one five-pound package of bees to each acre of fruit. Before being placed in the orchard, each package should be wrapped in slaters' felt, as shown in one of the accompanying illustrations, to shut out the weather. The cork at the end of the cage is pulled out and the bees let loose. At the close of the blooming period the bees should be removed before spraying or dusting and put in hives at least two miles away from the orchard so that the bees may not return to the original location.

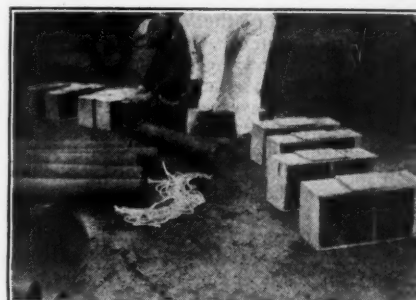
It goes without saying that the bees should be ordered so that delivery can be had just before the trees come into bloom.

Sphinx is a new date of Arizona origin. It is a large, plump, black date. So far this variety has not been grown anywhere else in the world. It is a prolific producer of offshoots as well as fruit. Mature trees over three years old have produced 300 to 400 pounds in a season.

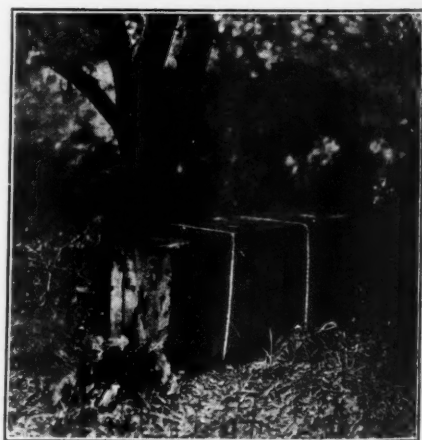
AMERICAN FRUIT GROWER



A package of bees from the South ready to be wrapped in paper for protection against weather.



Orchard packages are covered with building paper and the cage thus made to serve as a hive during fruit bloom.



Five-pound orchard packages scattered throughout the orchard, two packages to the acre, do a good job of pollination. The wire cages of bees should be wrapped in water-proof paper as here shown to protect them from the weather.

MARCH, 1936

Hardy English Walnuts

A RECENT note in a farm paper about hardy English walnuts has brought a flood of inquiries for additional information. Farmers and others interested in nut culture have long desired to grow English walnuts. This has led to the rather extensive planting of these trees throughout the better fruit growing sections of the northern and eastern portions of the country. Practically all of these trees have been planted in lots of half a dozen or less, and nearly all were seedling trees either purchased or raised from seed by the planter. Many were descended from trees of French or California origin, and many were raised from trees on the Pomeroy farm in Lockport, N. Y.

Being of seedling origin, much variation was shown in such characters as size and quality of nut, vigor, productiveness and hardiness of the trees. Some of these trees were of considerable merit and many sufficiently hardy to endure an average winter. However, the winter of 1933-34 with its record-breaking low temperatures destroyed or severely injured practically all of these trees.

A few trees of some English walnuts raised from seeds or scions of walnuts imported from Poland proved unusually hardy and stimulated interest in English walnuts.

The Rev. P. C. Crath of Toronto, Ontario, a missionary in Poland, first brought to the attention of nut culturists the fact that many English walnuts were growing in the Carpathian Mountains in southeastern Poland. In this region winter temperatures drop to -20° F. or lower. Following an unusually severe winter in 1928-29, many trees survived. Scions were brought to Canada and the United States, a few trees were grafted, and during the winter of 1933-34 demonstrated that they possessed unusual hardiness. Later, seeds were imported.

This winter another importation of seeds is being made and the Wisconsin State Horticultural Society is co-operating with the Ontario Nut Growers' Association in making the distribution of the seed in the northern states. Those who are interested in co-operating should write the Wisconsin State Horticultural Society, 1532 University Avenue, Madison.

It is highly desirable that as many trees as possible of this hardy strain be raised. Coming from seed, they will, of course, vary considerably in nut and tree characters, but in general they should be satisfactorily hardy. The nuts imported this year are from trees which during the winter of 1928 in Poland experienced -40° with little or no injury.


It will be many years before these nuts have demonstrated their merits sufficiently to justify their propagation by grafting for commercial planting, but in the meantime trees raised from these seeds will provide many nuts for home use and give their owners the satisfaction of knowing that they are assisting in the development of reliable hardy English walnuts for the northern states.

G. L. SLATE, Sec'y,
Northern Nut Growers' Association,
Geneva, N. Y.

Boysenberry Is Popular

TAKING its place among leaders of the bramble family, the Boysenberry is rapidly gaining in popularity throughout the country. This new fruit runs approximately one inch through and up to more than one and one-half inches in length. In color it resembles the Youngberry, but is less seedy. The flavor is superior to that of any of the bramble family members, according to those who have tried a number of samples of the berry. Its fine flavor and firm flesh coupled with the excellent appearance of the pack, create a consumer demand, say those growers who have marketed the new fruit. Another factor in favor of the


MARCH, 1936



**"The telephone has hung on
the wall for twenty-six years, bringing
and sending practically all messages of
life and death, joy and sorrow, which
have woven the fabric of our family life.
We would not want to be without it."**

— A farm woman of New York State

BELL TELEPHONE SYSTEM



BAND YOUR APPLE TREES KILL CODLING MOTH

Our experience has taught us how to chemically treat **TREE BANDS** that are guaranteed to kill the worms.

Write for Circulars and Prices
EDWIN H. HOUSE Saugatuck, Mich.
Remember, we pay the freight.

Boysenberry is the prolific bearing capacity of the vine.

From a triple cross, involving loganberries, blackberries and raspberries, the Boysenberries were bred by Rudolph Boysen, superintendent of Parks of Anaheim, Calif. The first of the new fruit was distributed to nurseries in 1932, and they have been propagating from the original stock since that time in order to keep up with the demand for plants.

AMERICAN FRUIT GROWER

Brenau College FOR WOMEN

A. B. Degree. Junior College Diploma. Advantages in Music, Art, Speech and Dramatic Art, Home Economics, Physical Education. Special courses adapted to needs of women of today. Located in foothills of Blue Ridge Mountains. Noted for health. Patronage 35 states. Three hundred and fifty acre campus; two lakes, bridle paths and hiking trails. Attractive social life. Near Atlanta. Ten national sororities. Address for literature:

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GET YOUR CHICKS FROM WORLD'S LARGEST chick producers and save money. Leading breeds hatching daily. Big catalog free. COLONIAL POULTRY FARMS, Box A, Pleasant Hill, Missouri.

BEEES

Good sideline, pleasure, profit. Send \$1.00 for one year subscription and 190 page book "First Lessons in Beekeeping." Catalog free. American Bee Journal, Box A, Hamilton, Illinois.

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PACKAGE BEES, 2 LBS. \$2.45; 3 LBS. \$3.15; 4 LBS. \$3.85; 5 LBS. \$4.55. W. O. GIBBS, Brookfield, Georgia. SPECIAL LARGE ORCHARD PACKAGE BEES, FOR rent April Delivery by truck from Georgia. Prices reasonable. STOLLER APIARIES, Latty, Ohio.

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SEVERE COLD KILLING MANY BEES. PLACE orders now and do not be disappointed. RAPIDES APIARIES, Winnfield, Louisiana.

ORCHARD PACKAGES OUR SPECIALTY. WRITE for information and prices. COTTON BELT APIARIES, Route 2, Paris, Texas.

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BERRY PLANTS OF SUPERIOR QUALITY. 5,000,000 Strawberry Plants—Mastodon, Dorsett, Fairfax, Catekill, Premier and other leading varieties. Raspberry and Blackberry Plants. Grape Vines, Currants and Gooseberry bushes. Asparagus roots. Our Spring 1936 Catalog is chock full of good things. It's free. Write for it. BOUNTIFUL RIDGE NURSERIES, Box H, Princess Anne, Maryland.

STRAWBERRIES—RASPBERRIES—GRAPES AND other berry plants are listed in Townsend's new catalogue. Write today for free copy. Tells how World's Largest Growers strawberry plants make plant selections for larger yields. Fully describes best paying varieties and gives complete growing methods. TOWNSEND'S NURSERIES, Dept. 20, Salisbury, Maryland.

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CERTIFIED BLAKEMORE, AROMA, KLONDIKE Strawberries: 1,000, \$2.00; 10,000, \$17.50. Dorsett, Fairfax: 500, \$2.50; 1,000, \$4.25. Lathan raspberries; Eldorado blackberries; youngberries: 10, 65c; 100, \$2.50. SHELBY PLANT FARMS, Memphis, Tennessee.

ROCKHILL EVERBEARING STRAWBERRY. BIG. Delicious. Full crop year planted. A money-maker. A table delight. Arrival in good condition guaranteed. Investigate. S. E. FISH, Eugene, Oregon.

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DAIRY GOAT JOURNAL, DEPT. 603, FAIRBURY, Nebr. Monthly Magazine, 25c yearly; 5 months 10c.

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BEAUTIFUL EMBROIDERY PIECE INSTRUCTIONS. 20c stamps. BROCKPORT VARIETY SHOP, 33 Main Street, Brockport, New York.

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BEAN AND HARDIE POWER SPRAYERS, OVER-hauled in A-1 shape. Priced right. KENNEY MACHINERY COMPANY, 301 W. Maryland Street, Indianapolis, Indiana.

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PAGE 36

NURSERY STOCK—Continued

SCARFF'S FRUIT PLANTS—WORLD'S FINEST Varieties—Potomac, most productive of all Raspberries; Black Beauty, Newburgh and other top notch Raspberries for home and commercial planting; Youngberries and Boysenberries, highest quality of all bramble fruits; Brainerd and Alfred Blackberries, Pootman Gooseberries, Red Lake Currants; Sweet September—The sensational new Fall Bearing Cherry; Lodi Apple, Kette Peach, Stanley Plum and many other varieties. Best of fruit and ornamentals described in our new Catalog. Write for free copy. W. N. SCARFF'S SONS, Dept. 31, New Carlisle, Ohio.

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FOR PRICES OF TREE BANDS AND GRAFTING Wax in small or large quantities write EDWIN H. HOUSE, Saugatuck, Michigan.

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CERTIFIED FROSTPROOF CABBAGE AND BERMUDA onion plants, open field grown, well rooted, strong. Cabbages: Each bunch fifty, muscovy, labeled with variety name, Jersey Wakefield, Charleston Wakefield, Succession, Copenhagen, Early Dutch, Late Dutch. Postpaid: 200, 65c; 300, 75c; 500, 1.00; 1,000, 1.75; Express collect, 60c per 1,000. Onions: Crystal Wax, Yellow Bermuda, Prizetaker, Sweet Spanish. Prepaid: 500, 60c; 1,000, 1.00; 6,000, \$3.50. Express collect, 6,000, \$2.00. F.O. B. Farms. Full count, prompt shipment, safe arrival, satisfaction guaranteed. UNION PLANT COMPANY, Texarkana, Arkansas.

VEGETABLE PLANTS. FROSTPROOF CABBAGE and Onions, leading varieties. 500—60c. 1000—\$1.00. 5000—\$4.50. Will ship C.O.D. Free catalog tomato, pepper and potatoes. Prompt shipment, safe arrival and satisfaction guaranteed. OMEGA PLANT FARMS, Omega, Georgia.

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WRITE FOR "WHAT'S WRONG WITH SOUTHERN Plant Growers." It's free. CARLISLE PLANT FARMS, Valdosta, Georgia.

AMERICAN FRUIT GROWER

BONDED ADVERTISING

(Continued from page 11)

that the advertising funds required are to be derived from the sale of the Bonded Labels to growers. Each registered grower must buy from the state the official labels which he in turn affixes on his barrels, crates or unit packages. These labels will be sold by the state at a cost not to exceed \$4.50 per thousand, and the Department of Agriculture reserves the right to place the difference between actual cost and the selling price to registrants in a Special Market Fund, all of which will be used to promote the sale of Michigan Farm Products bearing the Bonded Label, through the employment of modern means of advertising and sales promotion.

Michigan is the pioneer in this particular plan, and there can be no doubt about the beneficial results to producers, distributors and consumers alike.

As the officials of the Department of Agriculture point out, thousands of Michigan growers are now packing and grading their produce in accordance with all of the state's grading law requirements, and even better, but—Who knows it?

The Bonded Plan of Advertising is now being set up in order to inform buyers that a Michigan grade is an honest grade and that they can buy such labeled produce with confidence.

ANSWERS

(to questions on page 25)

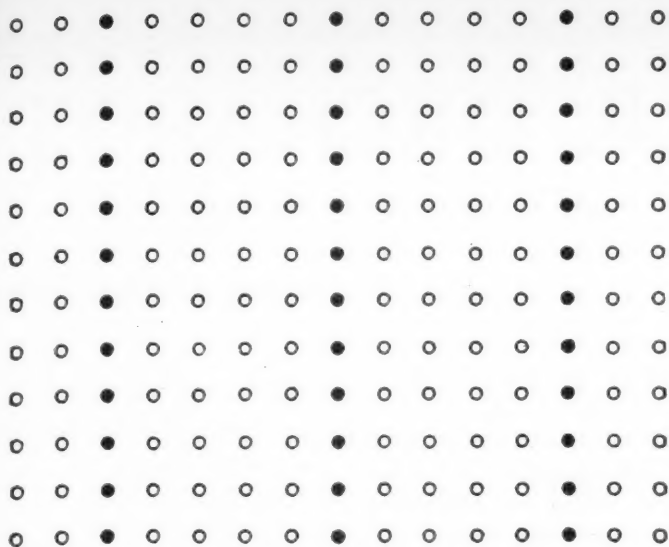
1. California, in a normal growing year, with New Jersey and Michigan following.
2. Jonathan, under general conditions.
3. Pollination is the deposition of pollen on the female flower part, while fertilization is the union of the male cell, contained in the pollen grain, with the female cell resulting in the formation of seed and fruit.
4. The western box contains about 23 cubic inches more than the struck bushel.
5. The Cortland apple is a seedling resulting from a cross between McIntosh and Ben Davis.
6. The McIntosh originated on the McIntosh homestead in Dundas County, Ontario, Canada, and distribution started from there about 1870.

BUILD YOUR OWN

slow speed wind charger from old automobile generator. We show you how. Make money building for others. Light your buildings and play radio. Dime (coin) brings complete plans and catalog, with twenty other generator changes. Satisfaction guaranteed or dime refunded.

LeJay Manufacturing Co.
1440 W. Lake St., Minneapolis, Minn.
MARCH, 1936





Suggested planting plan for permanent trees of the apple and pear. The main variety is indicated by the circle and the pollinizing variety or varieties by the solid circle.

NEW UNDERSTANDING OF FRUIT SETTING

(Continued from page 32)

this point that the orchardist enters into the fruit-setting picture. By making provision for an adequate supply of water, nitrogen, and other essential nutrients, he counteracts the disturbing effect of the extra chromosomes and thus makes possible the development of enough fruits for a full commercial crop. The immediate emphasis in fruit setting is thus seen to be upon adequate nutrition, with particular reference to those varieties which have the extra number of chromosomes.

What does the above recommendation mean in terms of orchard practice? It involves the presence of these materials in excess during the early spring when the female parts are completing their development, as well as during the fruit-setting period following pollination. It would seem reasonable to recommend annual pruning of the varieties with the extra chromosome number (Baldwin the important exception). Furthermore, as far as seems practicable from an economic viewpoint, the pruning should involve small cuts well distributed throughout the tree in order to distribute the favorable effects of the practice. As for nitrogen fertilization, the importance of an early application is re-emphasized.

One may ask the difference in these recommendations as compared with those of a decade ago. They differ from the latter in this respect: They are more insistent in their demands. The recommendation which was "should" is now "must" as concerns the varieties having the extra chromosome number and without Baldwin's convenient tendency to produce

fruits with few or no seeds. In the case of the diploid varieties, with few exceptions, the time and amount of pruning and fertilization with nitrogen are now seen to be relatively unimportant from a fruit-setting viewpoint.

The extra chromosomes in the varieties of Group II also present certain difficulties from the pollination standpoint. Obviously, special pro-

vision for cross-pollination becomes the more urgent, since the flowers capable of being fertilized have already been reduced in number by the disturbing influence of the extra chromosomes. To make this possible in cold, rainy weather, it is now advised that in new plantings no tree of these varieties should be placed farther than two rows (70 to 90 feet) from its pollinizing variety. This allows for four adjacent rows of Stayman Winesap, if the pollinizing trees are located on each flank. Previous recommendations provided for a pollinating source at a distance of not more than four rows, which, in the light of our present knowledge, seems insufficient. Furthermore, it now seems wise to insist that honeybees be introduced in plantings of these varieties, even though the population of wild pollinizing agents is thought to be high.

During the last 10 years the introduction of new strains and bud sports has complicated the problem of fruit setting. In consequence, investigations became necessary to determine whether a bud sport and the variety from which it originated were mutually effective as pollinizers. Uniform results in several states have indicated that such an arrangement is ineffective. A Starking and Delicious planting would produce no fruit unless an additional pollinizer such as Jonathan is introduced. Gallia Beauty and Rome fall into the same category. As a result, investigators conclude that where too close relationship exists between varieties, interplanting is unfruitful.

SUCCESSFUL ORCHARDS

● A "ROUND TABLE" PAGE FOR EVERY GROWER ●

"TAKE IT EASY" WHEN TOP-WORKING TREES

"GET down out of that tree and quit cutting off the whole top," might be the words of Cyril Vyhldal of Morse Bluff, Nebr., to one of the workers in his orchard who had been told to top-work a tree. The experiences of Mr. Vyhldal in top-working and grafting bring out a common difficulty encountered in this practice. Let him tell you what happened.

"I thought it would be a good plan to get all of my top-working done in one season so I cut the tops off of the trees which were pretty old. We split the branches and put in the scions in the spring just before the trees started to grow.

"It was a good thing that the trees we tried that year were old, because a good many of them died. Those that didn't die grew scions in fine shape, but the next winter we found out that they grew too good because they were all frozen out. Even before the winter freezing came along a good many of the scions broke out because they were too heavy.

"I then found out that we should have taken two or three years to work over the large trees, since the trees die or the scions are injured when the entire top is cut off in one season.

"From that time on we have always taken from six to eight good branches to be used for top-working, leaving the other branches on for a year or two until the scions have set good. Then we just cut off a few at a time. We place the scions into the branch just before the buds start to open. The graft is then covered with some regular grafting wax, and so far we have been able to top-work a lot of old trees with some of the best varieties."

CHANGE OF VARIETY AVOIDS "CRACKING"

TROUBLE with cracking of Stayman Winesap in southern Indiana and Illinois orchards for years apparently has been done away with by the use of the Turley variety, according to Guy Beauman, prominent grower of Tunnel Hill, Ill.

"We have found a way to get rid of most of the cracking in our orchard, and I don't mean wisecracking," says Mr. Beauman. "The Stayman Winesap in this section has caused us a good bit of trouble because of cracking and we are replacing it with the Turley variety, which has every bit as good appearance and quality, if not better, than the Stayman Winesap."

400,000 MOTHS IN SCREEN TEST

THAT famous old phrase, "The early bird catches the worm," now has a serious competitor, "This efficient orchardist catches 400,000 moths." The orchardist referred to is Merle Troth of Orleans, Ind. Read what he says about his experience:

"I had heard a good bit about the benefits to be obtained from screening the

This page is a place for growers to get together and exchange experiences and ideas. The beginner, as well as the veteran, will find here many practical suggestions for better and more profitable fruit growing. In return for the helps you receive from this page, be ready to pass on, for the benefit of others, any new idea, method or procedure you have developed or run across. Just jot it down as it occurs to you (a postcard will often do) and mail it to the "ROUND TABLE EDITOR," AMERICAN FRUIT GROWER. Don't worry about fancy writing. What the readers of this page want are practical pointers—that are to the point.

storage and packing shed to prevent the escape of moths in the late spring, so we decided to try it.

"Some of the men in the Horticulture Department at Purdue University were interested in the work and when we told them that we were screening, they said they would like to count the number of moths we caught in this way, so they assigned a man to count the number of moths that we caught last spring. Our storage is pretty large and the total number of moths counted amounted to more than 400,000. This certainly surprised us and made us realize how much worse the worms would have been last summer if all of those moths had escaped from the storage and packing shed. We are sold on the idea of screening."

ALFALFA ACTS AS "PERPETUAL" MULCH

"WE have on the Judson Fruit Farm, which I operate with my father, C. E. Judson, at Bristol, Ind., a system of soil management which has worked fine for several years. When we planted this particular plot in the orchard, we cultivated it for several years and then at the end of the third year we seeded it to alfalfa.

"The alfalfa has now been in this orchard for 10 years and we have never been forced to re-seed it. It is cut during the growing season just as any farmer would cut it for hay, and is mulched around the trees. A regular fruit fertilization program is followed in the 50-acre plot.

"Benefits we have derived from following this practice are: Moisture is held, much of the alternate bearing is pre-

AMERICAN FRUIT GROWER

vented, tree growth is better, and the fruit has a better color."

This statement by Victor Judson gives an excellent idea of what can be done with the alfalfa mulch system of soil management. The beneficial results of mulch are well known, and Mr. Judson says he will expand that portion of the orchard now under this system.

PROFESSOR "FLUNKS" MICE AND RABBITS

THE head of a history department of a large mid-western university would not ordinarily be expected to know much about fruit growing, but Paul Hayworth of Butler University, Indianapolis, Ind., operates a fruit farm at West Newton, Ind., and the following shows that he knows how to "flunk" winter pests.

"During the recent cold spell we noticed that many of our apple trees were being scarred by the feeding of rabbits and mice. This was logical, since most of their food supply sources were frozen and they had to resort to the bark of the trees for food. We didn't want the trees to become girdled by these pests, so we resorted to several means of keeping them away from the tree.

"Our first step was to remove the snow in an area two or three feet in diameter about the tree. We then painted the bark of the trees with the combination recently recommended by the Michigan station, which consists of five parts of resin and one part of linseed oil melted together. This was applied with a brush and was effective against the rabbits, but didn't work so well for the mice which burrow under the ground. In order to combat them, we placed some poison bait in their tunnels, which was obtained from the U. S. D. A. laboratory at Purdue University. We then cut off a few small branches from each tree for the rabbits and mice to feed on and this, along with the paint and bait, kept them from causing further injury."

PEACH LEAF CURL EASY TO CONTROL

"LAST year when some of our neighbors had trouble with peach leaf curl, we were not bothered at all," says Walter Miller, grower near Lynnville, Ind. Read how he conquered this pest.

"Peach leaf curl is not hard to control if you thoroughly cover the tree with a spray of 6-6-100 Bordeaux any time while the tree is dormant. Be careful to get it on before the buds begin to swell.

"If there is scale in the orchard, use 12 gallons of 32° Baume lime-sulphur to each 100 gallons of diluted spray in place of the Bordeaux. Bordeaux and oil combinations also can be used, when there should be enough emulsion to give a three per cent oil test in the 6-6-100 Bordeaux spray. We found that the temperature should be above 50° F when oil is used.

"One spray is enough if you get it on before the buds swell and if all parts of the tree are covered. On an unsprayed diseased tree, the young leaves are thicker than normal and later they curl up."

MARCH, 1936

ALSO, LIME
ARSENATE -
X-19 (PYRET)

MARCH, 1936

COME ON OUT,
MRS. MOTH, AND WE'LL
SHOW YOU THE WAY TO
RACE SUICIDE...WITH
AN ASTRINGENT IN
YOUR ARSENIC

ASTRINGENT" Arsenate of Lead, on the basis of growers' own observations of its 15% to 20% increased efficiency, deserves use from the very start of your season's codling moth spray program. First brood control is all-important.

And also, in the cluster bud spray you will want to be especially on guard against scab infection. Orchard Brand "Apple Dritomic" Sulphur, 6 pounds in each 100 gallon spray batch, will give you consistent protection. The tempered reaction of this form of sulphur makes "Apple Dritomic" a safer spray to use on the tender new leaf growth at this season. Ask your neighbor who used it last year.

Have you read the new edition of "Cash Crops?" Ask us to send you a copy.

ORCHARD BRAND

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SPRAYS AND DUSTS



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ALSO: LIME SULPHUR SOLUTION — DRY LIME SULPHUR — OIL EMULSION "83" — STANDARD ARSENATE OF LEAD — CALCIUM ARSENATE — ARSENITE OF ZINC — BASIC ZINC ARSENATE — PARIS GREEN — BORDEAUX MIXTURE — DRITOMIC SULPHUR — APPLE DRITOMIC SULPHUR — PARADICHLOROBENZENE — NICOTINE SULPHATE 40% — X-13 (PYRETHRUM EXTRACT) — FUNGI (SULPHUR) DUST — SULPHUR-ARSENICAL DUSTS — BORDEAUX-ARSENICAL DUST — COPPER LIME DUSTS — ROTENONE DUST

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tion that goes with Dow products in their use the world over.

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